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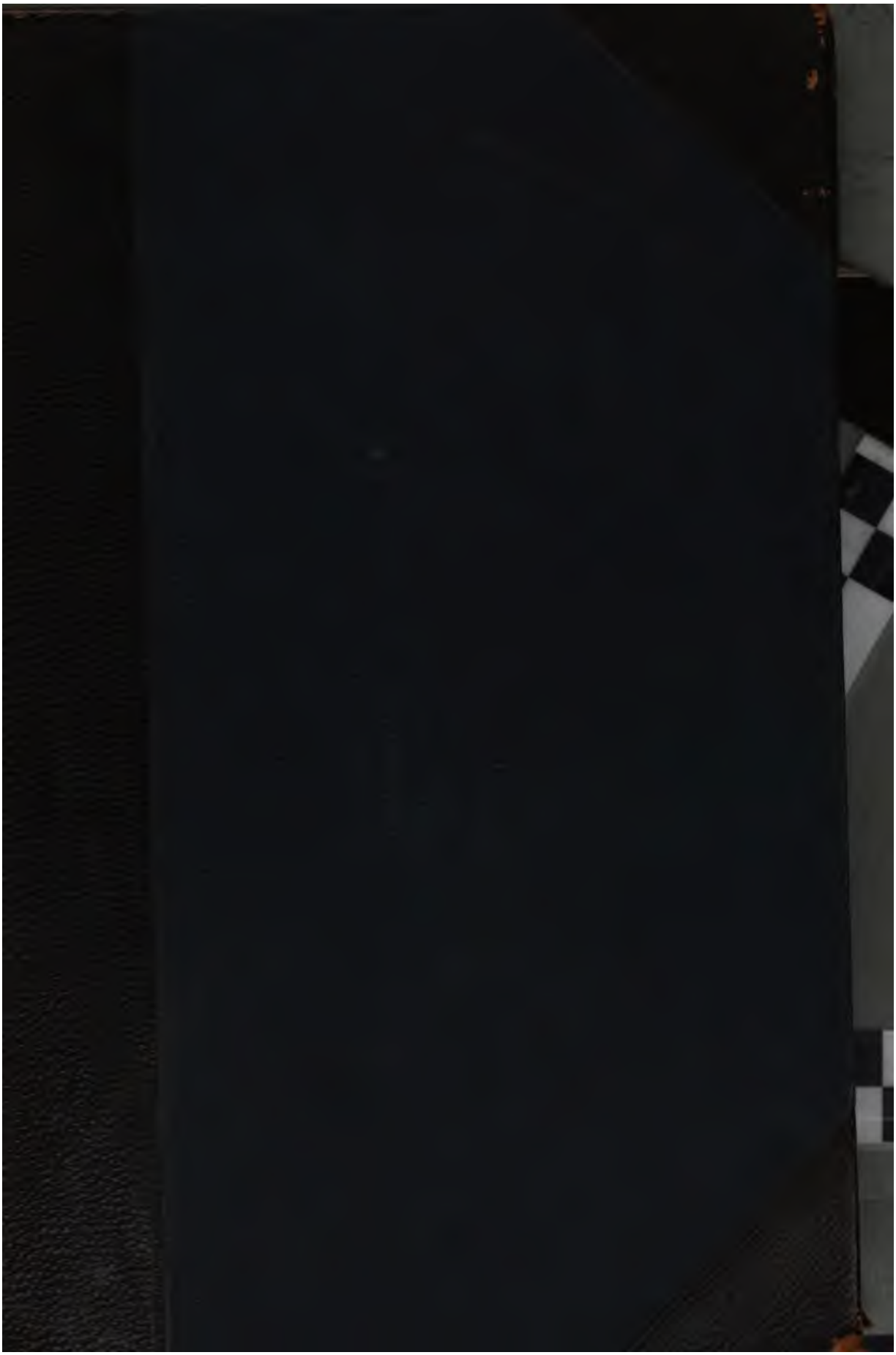

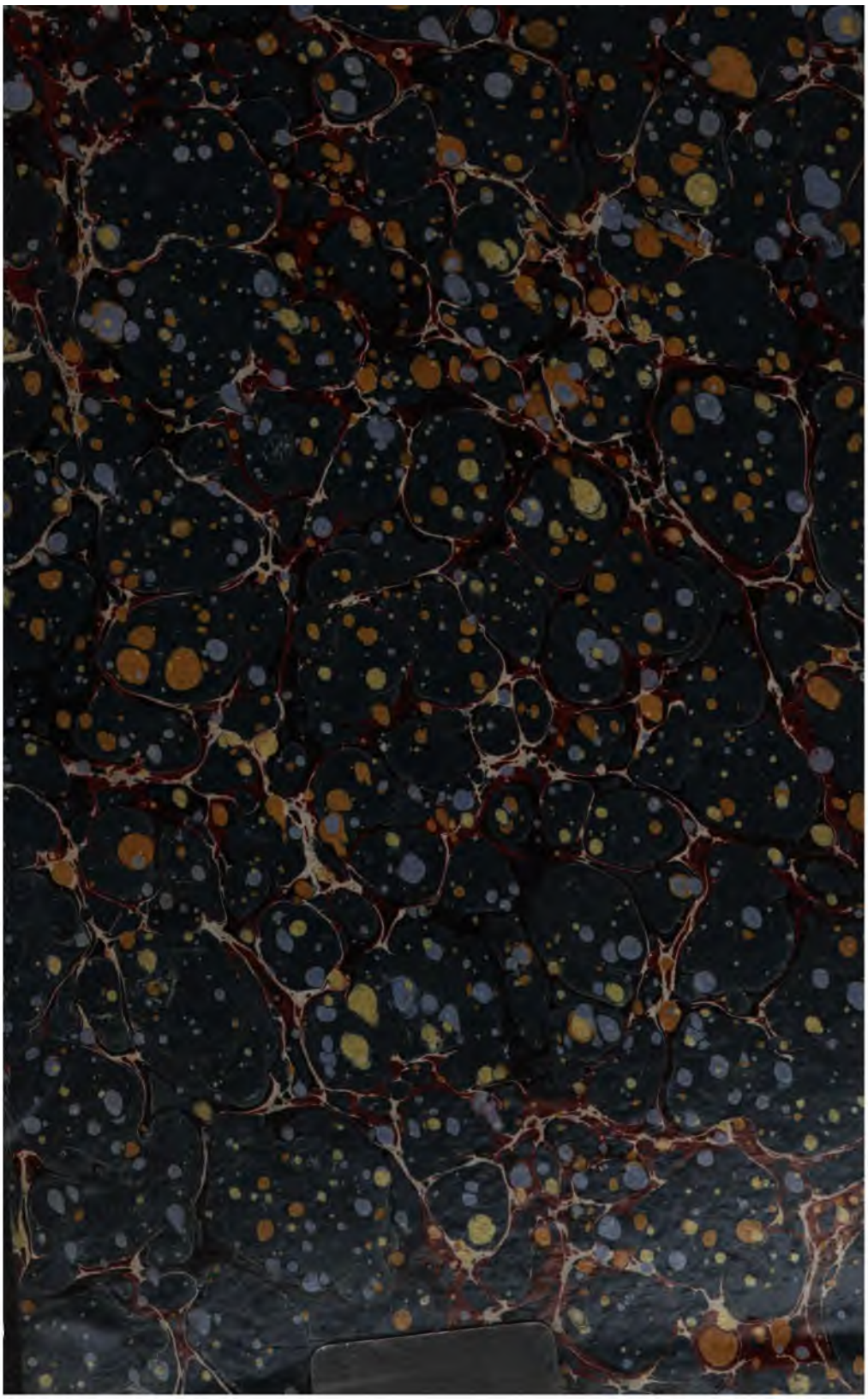

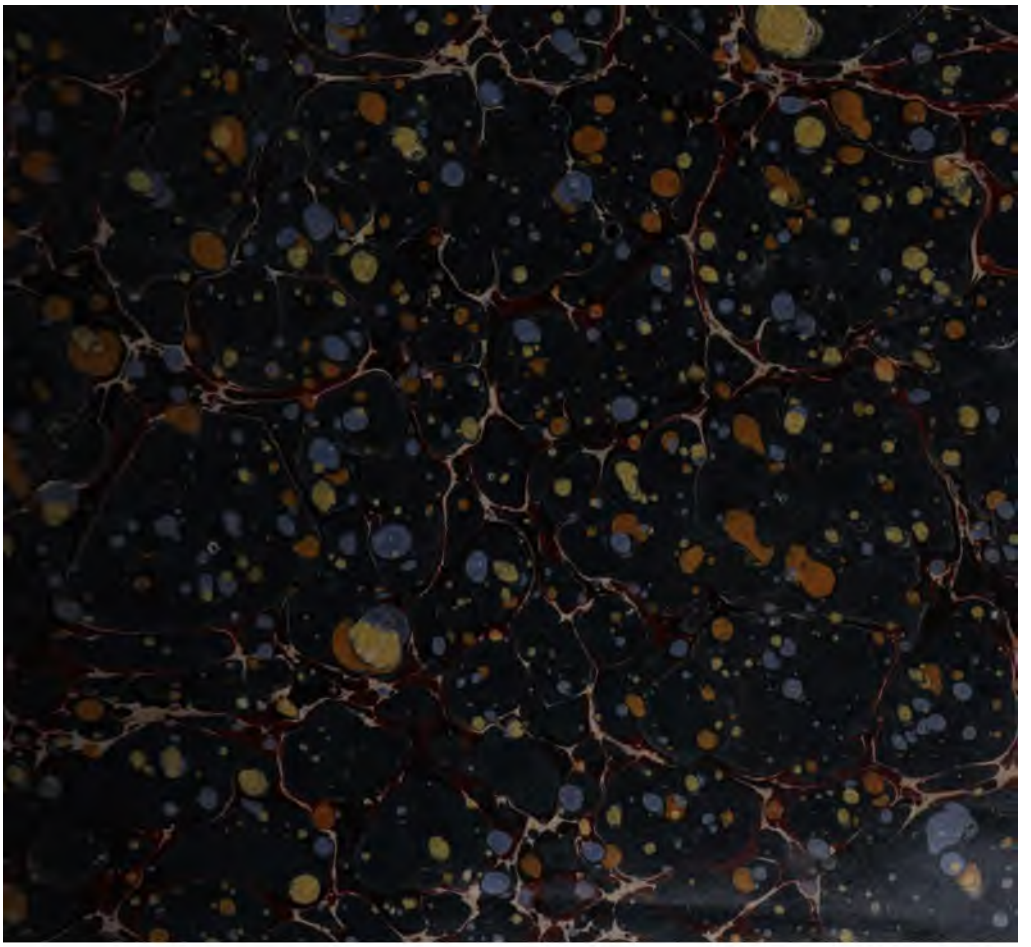

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DEVOTED TO THE PHILOSOPHY OF SCIENCE

VOLUME X

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THE MONIST

THE POLYCHROME BIBLE.[1]

THE close of the century will see the completion of an extensive undertaking in scientific scholarship which is of such far-reaching significance and of such general interest that even journals which do not address exclusively the learned public must notice it. Since this work belongs to the field of theology, or more properly, of the history of religion, and since it owes its origin to American idealism and American devotion, an American periodical is a very fit medium through which to report upon it. The work to which I refer is the Polychrome Bible,[2] which has been dubbed by unfriendly tongues "The Rainbow Bible." I gladly accept this name in the Biblical sense of the word. One of the most poetical stories of the entire Old Testament is that of the rainbow after the flood (Genesis ix.), appointed by God himself for a token of peace. When the clouds gather again and the rain streams down, then God will send the rainbow as a sign of the promise that the flood shall not again destroy the human race. The comparison of Biblical criticism with a flood which pours down swallowing and drowning every living thing is one which is entirely familiar to pious circles.

[1] Translated from Prof. Cornill's MS. by W. H. Carruth.

[2] *The Sacred Books of the Old and New Testaments.* A New English Translation. With Explanatory Notes and Pictorial Illustrations. Prepared by eminent Biblical scholars of Europe and of America and, edited, with the assistance of Horace Howard Furness, by Paul Haupt, Professor in the Johns Hopkins University, Baltimore. Published in parts by Dodd, Mead & Co., New York; James Clarke & Co., London; Deutsche Verlags-Anstalt, Stuttgart.

Well, here too God has provided that the rainbow, the sign of peace, the token of his covenant with mankind, shall not be lacking: above the wild billows of criticism hovers the rainbow with its mild light and its inspiriting play of colors, and to show this clearly and proclaim it aloud is the fine and high office of the "Rainbow Bible." Not in vain, but for the good of the Bible itself, and yielding the only means of a real understanding and a just appreciation, have more than a hundred years of serious and tireless labor been applied to it; the "Rainbow Bible" has undertaken the task of making the results of this labor accessible to all who are unable to burrow into it and, as it were, do the work over for themselves, but yet have an interest in the results. And this every educated man must have.

The Bible is beyond all question the most important book in the literature of the world. This fact cannot be denied even by those who no longer regard it as a divine revelation in the sense of Christian dogmatics. As the sacred book of the civilized world of Europe and America it is a unique document for the history of religion, which, in contrast to the Koran, has really had a history of its own and is the literary deposit of a long period of religious evolution. And the Old Testament especially is a document of the utmost importance in profane as well as in sacred history, since to it we owe all that we know of the people of Israel, one of the most important peoples of the whole human race. And the work of the "Rainbow Bible" is devoted exclusively to the Old Testament. Its detailed arrangement, its aims, and the way in which it seeks to attain them, have been explained fully by the Editor of *The Monist* in *The Open Court* for May, 1898; but he wishes further that a specialist should also furnish *The Monist* some account of the matter. He has refused to accept my objection that, as one of the editors, I am scarcely the proper person for this work. At any rate, I have made an honest endeavor to be as objective as possible and let the work speak for itself.

The inception of the work is to be credited to America. The interest in the Bible and the devotion to all that concerns the Bible and Biblical science are most widely diffused and most vividly felt in

the lands of the English tongue, England and America. This fact is recognised even by those to whom it is mortifying. The success of such a publication as S. R. Driver's *Introduction to the Literature of the Old Testament* would be inconceivable in Germany or Holland or Switzerland. But America did not depend wholly upon herself in this undertaking; she sought the editors in the Old as well as in the New World. Biblical criticism being the palladium of evangelical church and scholarship, it is a matter of course that the participants in the work are all members of the Germanic races in the broadest sense of the term. At the head of the undertaking, as editor-in-chief, stands a man who in a certain sense typifies in his own person the scientific union between the Old World and the New, Professor Paul Haupt, of the Johns Hopkins University, whose very name is a sufficient guaranty for the work under his direction. The plan and the arrangement of the whole are due to him; the power to carry out these plans he owes to the warm appreciation and vigorous support which he has found in his adopted fatherland. Originally the work was intended to be only a new translation with brief commentary on the matter; the publication of the Hebrew text, which has appeared first, is due to an American gentleman who placed the necessary means at Professor Haupt's disposal.

The Bible may be regarded from two points of view: as a manual of edification, and as a document in the history of religion. Both of these points of view have their justification. The church never will, never should, see in the Bible other than a manual of edification, and so also the pious individual who is moved wholly by his religious needs is in the same case: for example, one who seeks in the Psalms only religious edification, or to express it as briefly and clearly as possible, he who prays the Psalms, is absolutely oblivious to the existence of literary questions; he finds in them only the classical expression of what moves his own heart, but which he would not be able to put into words so well, and he asks nothing more of them; just as it is a matter of complete indifference, to one who sings an evangelical hymn in the service along with the whole congregation, by whom and under what circumstances the song in question was composed, and whether he is

singing it with literal correctness or has the literally correct spelling before him as it was originally written by the poet. But on the other hand, he who wishes to go to the bottom of matters, who takes a scientific interest in the Bible, may and must regard it only as a document in the history of religion, which must be interpreted and treated just as scholarship treats and interprets any document, that is, in accordance with the principles of independent science, whose method is systematic criticism. By simple but ingenious devices Professor Haupt has managed to satisfy both of these legitimate demands and to make the book helpful for both sorts of readers. The work of text criticism is indicated by small, scarcely visible characters, which will not annoy the reader who does not care for them, and the indication of sources is marked by different colored print, which can also easily be ignored. Furthermore, in the comments all theological discussion and anything that could offend the devout reader is strictly excluded. The work aims to be an aid to the reader of the Bible, and to furnish him a really legible text and all that is indispensable for understanding the material allusions without his having to look about elsewhere and refer to Bible dictionaries and the like. Accordingly one who is seeking solely religious edification will simply follow the translation, ignoring critical marks and colors, and will find the book worth his while; the short explanations of material difficulties and the tastefully selected and excellently executed illustrations will not annoy him, but rather be helpful and instructive. On the other hand, to the one who reads the Bible from purely scientific interest as a document in the history of religion these signs and colors tell all that he cares for and yet absolutely must know.

But right here at the beginning arises an important and fundamental question. Is an undertaking of this sort feasible at all, or at least is it not premature? Has Biblical criticism really accumulated such a stock of established conclusions and conceded results that it is safe to propose to popularize them, to put into the hands of the layman a Bible in which a certain view of the Biblical books is presented as the only correct one? Is not such a course equivalent to taking the public into tutelage and veiling the true

situation? A highly respected and irreconcilable opponent of the "Rainbow Bible," in discussing certain numbers of the Hebrew text edition, raised the question, whether there were, even among the thirty-nine collaborators, two who would hold in all details precisely the same view in any really difficult and complex problem, as for instance concerning the books of Samuel or Jeremiah, and thought that he had therewith pronounced the death sentence upon the whole work. This question is entirely legitimate, and represents the actual state of affairs; indeed, I will even confess that, upon the ground of my own and others' work in the past seven years, I myself would to-day decide differently in many details concerning Jeremiah from my conclusions of 1892, when I finished my edition of the text of this book; but this is absolutely no reproach to the "Rainbow Bible." What would be said, if some one should demand that nothing should be written for the wider public regarding such men as Frederick the Great, Napoleon I., Washington, and Lincoln, until historians were absolutely agreed not only in their judgment and estimate of these men in general, but concerning all the details of their lives, concerning their every action and the motives for it? But in making this comparison the fact is not to be overlooked that investigators are already unanimous concerning very many important and once burning questions in Old Testament criticism, and especially that the fundamental right to apply the principles of criticism to the investigation of the Old Testament is universally conceded: one would needs seek to-day with the lantern of Diogenes for men of serious repute in scholarship who really believe that the Pentateuch in its present traditional form from the first letter to the last was written by Moses, or the Book of Isaiah by Isaiah, or the Book of Jeremiah by Jeremiah, or the Book of Daniel by a contemporary of Nebuchadnezzar. If, therefore, the basis on which Old Testament science, and accordingly the "Rainbow Bible," is built is so universally recognised, it is certainly permissible to continue to build publicly upon this universally recognised foundation.

If the undertaking has thus shown itself to be so unassailable, it must be proven further that it is absolutely necessary, and this in the interest of the Bible itself. It is a memorable fact for all

time, that the father of the rational literary criticism of the Old Testament, the French physician Jean Astruc († 1766), who first proved the Book of Genesis to be a combination of various documents, undertook his work as an apologist, to defend the composition of Genesis by Moses against the objections of the English Deists and the French free-thinkers. Its best and only efficient apology is a genuinely free and scientific conception and treatment of the Bible, because by this we come to understand what from an uncritical and literal standpoint would remain incomprehensible, contradictory, and often absolutely senseless.

I will cite a number of these incomprehensible, contradictory, and often absolutely senseless things in the Bible which must compel the attention of every Bible reader if he reads fearlessly and with good common sense. In the seventeenth chapter of Genesis Abraham refuses to entertain the prospect of an heir, because his wife Sarah is already ninety years old, and during the time between this announcement and the birth of Isaac, Abraham and Sarah are in Gerar where Abraham alleges the ninety-year old woman to be his sister, whereupon she is taken into the harem of King Abimelech. In Genesis xxi., Hagar and her son Ishmael are cast out by Abraham. A year before the birth of Isaac, Ishmael was already thirteen years old (Genesis xvii. 25), and must therefore have been about sixteen years old after the weaning of Isaac. Now in the Greek text of Genesis xxi. 14 it stands: And Abraham took bread and a bottle of water and gave it to Hagar, and laid the child upon her shoulder and sent her away. The Hebrew text indeed, by a transposition of the words, has reduced all this to the syntactically very vulnerable sentence: And Abraham took bread and a bottle of water and gave it to Hagar, putting it upon her shoulder, and the boy, and sent her away; but even the Hebrew text writes in the following verse: And she threw the child under a shrub,—a clear proof that in the original Hebrew text also, as in the Greek, Hagar carried Ishmael on her shoulder, as indeed the whole further course of the episode plainly represents him as a helpless little child, and not as a half-grown youth. Let us continue our examination. A considerable time after the death of Sarah, which occurred in her

one hundred and twenty-seventh year, which according to Genesis xvii. 17 was Abraham's one hundred and thirty-seventh year, the latter marries Keturah (Genesis xxv. 1), and has by her six sons, whose birth is reported as something perfectly natural and matter-of-course, whereas the birth of Isaac, which took place thirty-seven years or more before, can be understood only as a miracle of divine omnipotence. According to the same chapter, Genesis xxv., Isaac married Rebekah in his fortieth year, and the twin sons, Esau and Jacob, are born after about twenty years of married life. These two sons are already grown up and independent young men, and accordingly at least twenty years old, when (chapter xxvi.) Isaac is compelled by famine to go to Gerar. There, when the people of the country inquire about Rebekah, who has been married to him for forty years and has two grown sons, he reports her to be his sister, for fear they may kill him in order to take possession of his wife.

The next fact related is the deceit of Jacob whereby he obtains the birth-right, his flight to Haran and his meeting with Rachel at the well. Every one who reads this account without preconception will think of Jacob as a young man of not over thirty years; but if we reckon up the data given in Genesis we come to the surprising result that he had already reached the venerable age of seventy-one at the time of his flight to Haran and his suit for Rachel. Joseph is sold into Egypt at the age of seventeen (Genesis xxxvii. 2), and elevated to the office of vizier of the Pharaoh at thirty (Genesis xli. 46); then follow the seven years of plenty, and when Joseph makes himself known to his brothers and sends for his old father to come to Egypt, two of the years of famine are past (Genesis xlv. 6); accordingly Joseph was at this time thirty-nine years old. And in the same year, at his presentation to Pharaoh, Jacob reports his age as one hundred and thirty (Genesis xlvii. 9); therefore Joseph must have been born in his father's ninety-first year, and as he was born in Haran and Jacob lived in Haran altogether twenty years, he must have fled thither at the age of seventy-one.

The thirty-eighth chapter of Genesis gives us another hard nut to crack. Between the sale of Joseph into Egypt and the emigra-

tion thither of Jacob and his sons, twenty-two years have passed, as we have just seen, and in these twenty-two years all that is told in the thirty-eighth chapter of Genesis must have taken place. Judah separates himself from his brethren, marries Shua, the daughter of the Adullamite, and has three sons by her; for Er, the first-born, he obtains Tamar as wife, but Er dies without heirs; his brother Onan is required to enter into a leviratical marriage with his widowed sister-in-law, but he too dies childless; now Tamar is to remain a widow until the youngest son, Shelah, is grown, but as he is not given her in marriage when this occurs, Tamar manages to obtain twin sons by her father-in-law, Judah, and these sons too must be grown up, since at the end of the twenty-two years at our disposal Perez himself has two sons (Genesis xlvi. 12). In chapter xlii. Judah is again with his brethren in the house of Jacob, and while Jacob's first-born, Reuben, is able to offer his two sons as pledge that he will bring back his brother Benjamin unharmed, Judah can give only his own person as security,—it is quite impossible to conceive of the Judah of chapters xlii.–xlv. as an aged widower with two grandchildren and two great-grandchildren. But the case that most severely taxes our credulity is, perhaps, that Benjamin, whom his father is unwilling to let go because he fears some misfortune might befall the boy on the way, is, but a few weeks later on the occasion of the migration of the whole family to Egypt, the father of ten sons! In any case Benjamin, who is to be thought of as only a little younger than Joseph, must at this time have been far along in the thirties, while for Judah, who also brings with him two great-grandchildren, his age, at the most fifty-four, entirely excludes the possibility of his being a great-grandfather, especially in view of the fact that his own marriage took place, according to the express testimony of Genesis xxxviii. 1, after the sale of Joseph into Egypt, at which time he must have been at least thirty-two years old. And if we reckon up the ages of the different individuals we arrive at the most surprising result, which no unprofessional reader of the Bible would have dreamed of unless he himself had made the calculation. Noah died when Abraham was already fifty-eight years old; at the death of Noah's son Shem,

Esau and Jacob had reached fifty; Abraham, whose death had been mentioned some time before (*cp.* especially the words of Genesis xxv. 11, "And now when Abraham was dead God blessed Isaac, his son, and Isaac dwelt at Beer-lahai-roi"), in fact survived the twenty sterile years of Isaac's marriage and lived to take pleasure in his grandsons Esau and Jacob for fifteen years; and Isaac, who at the time when Jacob stole the birthright was already advanced in years and hourly awaiting his death, survived the sale of Joseph into Egypt by twelve years.

But I will desist from this counting and accounting, which may have ceased already to appear serious; my purpose was simply to show in the most striking fashion to what monstrous conclusions we are forced by the assumption that Genesis is an inspired and consistent book written by Moses. Under these circumstances is it not actually a blessing for the thoughtful reader of the Bible if the "Rainbow Bible" with its color-wash saves him from these conclusions by showing him that we have in Genesis a combination of various independent documents which do not need to be combined and correlated, but each is responsible only for its own contents and not at all for what the others have to say? And is it not the sacred duty of scholarship to bestow this blessing upon the thoughtful reader of the Bible, even at the risk of finding that in the separation of the sources not all specialists will agree in every single sentence and word with the editor of Genesis in the "Rainbow Bible?"

I propose now to examine some other accounts, and select for the first the story of Joshua's crossing the Jordan, Joshua iii. and iv. The attentive reader who approaches these chapters unprepared will find himself in great embarrassment and unable to gain any clear notion of how the narrative itself conceives the proceeding. Even iii. 2 is puzzling. After the Israelites had taken up their last night-quarters before crossing the Jordan (iii. 1), we are not prepared for seeing them stay there for three days (iii. 2), but rather for their effecting the crossing on the following day, as reported in iii. 5. Then verse 12 is very strange. In between the two immediately successive verses 11 and 13 comes the command, utterly

without explanation, to choose out twelve men, one from each tribe. What these are to do is not told, and they are not again mentioned until the "whole nation (I say 'nation' intentionally, and not 'people' because the Hebrew text in characteristic fashion changes the word here in contrast to iv., 10 and 11) is across the Jordan" (iii. 17). "And now when the whole nation was across the Jordan (iv. 1)," the command to choose out twelve men, one from each tribe, is simply repeated. These men are to take from the place where stood the Ark of the Covenant in the midst of the Jordan, twelve stones, and carry them to the other shore, in order to set them up as a perpetual memorial at the first camping-place on the west bank of the Jordan. Thus far this would be clear. But in iv. 5 Joshua commands the same twelve men to go, each with a stone on his shoulder, past the Ark of the Covenant into the Jordan, and in verse 8 the "children of Israel," and not the twelve men, take twelve stones out from the midst of the Jordan and carry them across to the other bank. And then, in verse 9, Joshua sets up twelve stones in the midst of the Jordan in the place where the Ark of the Covenant had stood, where they "are to be seen until this day;" then the people passed hastily over (verse 10), and in verse 11 the whole people is across the Jordan, while the Ark of the Covenant goes on before them. Should not the reader be thankful here also to the "Rainbow Bible" if it can furnish him a thread to guide him through this labyrinth? Plainly our two chapters contain two parallel accounts united and confused. According to the one, which is unquestionably the older, the people, having sanctified themselves, passed through the Jordan, the Ark of the Covenant leading, and Joshua had twelve stones carried along from the dry river-bed, which were set up as a perpetual memorial at Gilgal, the first resting-place on the west river-bank. According to the other and later account, the Ark of the Covenant goes down first into the river, and stops in the midst of it until all Israel has passed over dry shod. While still on the east bank Joshua had selected twelve men who were to march before the Ark with stones from the east bank on their shoulders, and these stones they afterwards set up in the midst of the river-bed on the spot where the Ark of the Cov-

enant had stood; then the Ark too leaves the river and the waters return to their bed.

It might be objected to the examples thus far chosen by us from Genesis and Joshua, that we stand here, of course, on the territory of legend, and that we have no right to be surprised if the tradition is often confused and self-contradictory. Therefore I will consider a few more cases from strictly historical times. Not even the most radical criticism ventures to deny that Saul and David are historical personages, and that the facts reported to us about them and their lives are on the whole entirely well founded, even though it has to be admitted that there are here and there legendary ornaments. And yet, how lenient we have to be with the books of Samuel in their present form! 1 Samuel x. 17–27, tells us how Samuel summons the whole people to Mizpah; how there the Benjaminite Saul is chosen by lot king over Israel and greeted jubilantly by the people as the chosen one of Jahveh; and how, when he returns to his home in Gibeah, all the men of valor, whose hearts God had touched, go with him. In chapter xi. the city of Jabesh in Gilead is in sore straits at the hands of the Ammonites, and sends messengers for help "into all the borders of Israel." Plainly they knew nothing of the fact that Israel already had a king, and in Israel too no one knows of it, not even in Saul's home, Gibeah, for the messengers from Jabesh come to Gibeah as they do to other cities and present their petition for help, while Saul is plowing in the field; no one refers the messengers to him, no one goes to inform him; when he returns from his work in the field he sees that the people are all weeping, and learns what has happened only in reply to his direct question. And now Saul does not take the men of valor who had gone with him to Gibeah, nor summon the army of Israel in the name of the king, who was chosen expressly to lead Israel and fight its battles (viii. 20), but he has to gather followers for the relief of Jabesh by a symbolical performance in which he appeals to their sense of honor and common interest. Let him who can understand this!

Further: In 1 Samuel xvi. 18, some one near to Saul recommends to the sick king the Bethlehemite David as a man who can

play the harp and is moreover "a mighty man of valor and a man of war," and on the strength of this Saul takes him for his armor-bearer, that is, his personal adjutant. And when this same David, in chapter xvii., proposes to undertake the conflict with Goliath, Saul warns him with reference to his youth, and when he persists Saul has his own armor put on him, and when David tries to walk in it he is unable to do so because he has never worn armor, but undertakes the combat armed only with a sling. And when he has actually slain Goliath, "then said Saul to Abner: Whose son is this youth, Abner? And Abner answered: As thy soul liveth, O king, I cannot tell. Then spoke the king: Inquire thou whose son this stripling is" (verses 55 and 56). This same Saul had sent a formal embassy to Jesse to ask for his son, and now knows nothing of the kinship of his own most intimate servant, and treats him whom he had chosen on account of his valor to be his armor-bearer, as though he were a boy in leading-strings.

Still further: after Saul has already thrown his javelin at his son-in-law twice, and David has been saved from the emissaries of Saul only by the cunning of his wife Michal, and has been obliged to flee in haste, as we are informed in chapters xviii. and xix, we find him in chapter xx. still at the court of Saul, and complaining to Jonathan that the king seems to be ill-disposed toward him and plotting against his life. Jonathan rejects the possibility of this entirely: there can be no thought of such a thing; but yet decides at David's request to sound his father and to inform David of the result, and to his own painful surprise is compelled to admit that David's fear was well grounded. That the author who wrote this chapter cannot have reported before what we now read in chapters xvii., xviii. and xix., is as clear as day. Should not the reader of the Bible be thankful here again to the "Rainbow Bible" if by its color-wash it makes possible for the first time a really unmixed enjoyment of the books of Samuel, the separate narratives of which are among the most beautiful and poetical things which are to be found in all Hebrew literature?

Another historical work of the Old Testament becomes really serviceable only by this same mode of treatment, the latest of all,

the Books of Chronicles. It is well known that the accounts of the Books of Chronicles run parallel with those of Samuel and Kings, but that there are material differences between them, and that Chronicles gives an entirely different general impression of the material. Accordingly it is highly important for every reader to be enabled by the "Rainbow Bible" to recognise at the first glance what portions of Chronicles agree entirely with the parallel accounts of the older historical books, where they deviate from the older authorities, even though it be in only a single word or an apparently most unimportant feature, and what is reported by Chronicles alone and is wholly without parallel.

Thus far we have considered only examples from the historical books, as though the books of the Old Testament were nothing but historical documents. I propose to show now how this separation of the sources is of the highest importance for the theological investigator also. In the very midst of the whole system of Christian dogmatics stands the conception of atonement, the crucifixion of Jesus being regarded as an atoning sacrifice, and therefore it is a question of the greatest importance for theology to know what those who first applied the expression "atonement" to the death of Jesus really understood by it, and what notions of it they could assume to be familiar to their first hearers. (I formulate this as cautiously as possible intentionally because in the opinion of many it was not Jesus, but the apostle Paul, who did this). In any case, it is clear that the roots of the idea are to be found in the Old Testament, so that the question now assumes the shape: What does the Old Testament understand by atonement? There are explicit utterances on the subject in the laws found in Leviticus iv. and v. But if one proceeds to the examination of Leviticus iv. and v. he will find two sorts of sacrifices of atonement: sacrifices for sin, and sacrifices for guilt. And if he then undertakes to get a clear conception of these two sorts of atonement and their characteristic distinctions, he will again find himself involved in great difficulties and scarcely reach any satisfactory results. Here again the "Rainbow Bible" is a welcome aid, showing by its color-wash that this

sacrificial code is not a single, consistent body of laws, but that it developed gradually and in various strata.

Indeed the color-wash actually saves the honor of the Bible in the matter of religion and morals. As proof of this I will limit myself to two particularly striking cases. Toward the close of Genesis xxx. we are told how Jacob, by various dark practices manages to get possession of a considerable, and that the best, part of Laban's flocks. And a few verses further on he tells his wives, in order to show them that it is high time for him to return home, that Laban has evil plans against him, but that God has been with him: Laban had tried to cheat him, but God had not permitted Laban to harm him, "And thus God hath taken away the cattle of your father and given them to me." Only read the whole speech of Jacob, Genesis xxxi. 5–13. I am sorry for any one who can do this without bursting out in indignation. If he can, it is to be explained only because he is burdened with the old conception of the Bible as the inspired and sacred word of God, which paralyses the moral judgment and checks its exercise. When the man who must have known perfectly well what he had done plays persecuted innocence to his wives and assures them with deep feeling that God himself had deprived their father of his flocks and given them to him, he is such an infamous hypocrite, and this is such a shameless desecration of the name of God, that no expression could be too sharp for it. Under these circumstances does it not comfort one greatly when the "Rainbow Bible" shows by its color-wash that the close of chapter xxx. and the beginning of chapter xxxi. belong to two entirely different sources, and have nothing to do with each other?

Another example, in which we are called upon to sit in moral judgment upon a man who is highly commended by the Bible narrative, the prophet Samuel. According to 1 Samuel x. 1 ff., Samuel privately anointed as king the Benjaminite Saul on the occasion of a visit to his city of Ramah, and prophesied to him his lofty calling; after Saul has left him he calls an assembly of all Israel at Mizpah, in which by divine command he is to ascertain by lot the one chosen by Jahveh to be king; the lot cast by Samuel actually falls upon this very Saul with whom Samuel had long since ar-

ranged it and whom he had already anointed king in private. When we read in Josephus's history of the war in Judea, how after the surrender of Jotapata Josephus with forty men took refuge in a cave, and that they there, upon a proposal by Josephus, determine by lot the order in which they are to kill each other in order to keep from falling alive into the hands of the Romans, and when upon the drawing of the lots, which of course is conducted by Josephus as commanding officer, all the others are taken by the lot and Josephus alone is left alive, every reader says as a matter of course that Josephus cheated in the drawing. And when Samuel takes with the lot just the one whom he wants to take, one cannot avoid the suspicion that he in some way assisted chance. But if (thus we may continue to argue quite logically) Samuel did not hesitate to make Saul king by deceitful manipulation in the name of God, he must have had especial reasons for it. What can these have been? Soon we recall the expression with which Saul seeks to repel the first mysterious hint of Samuel: I am a Benjaminite, one of the least of the tribes in Israel, and my father's house is the least in my tribe. Here we have what we are looking for. Samuel wanted a king without family power and without personal influence, so that he would allow Samuel to direct him when king and be a willing tool in the hands of the hierarchy; and this is why his eye fell upon the Benjaminite Saul, and this is why God Himself must be made to choose him from among all Israel by sacred lot. This reasoning, which no historian would object to, is after all suggested by the narrative itself, is merely an inference from its details based upon the presumption of their unity. And thus we obtain in Samuel the type of the intriguing priest, to whom religion is a pretext and a means of attaining the selfish ends of the hierarchy, and who does not shrink from pious fraud. And from this stain, the darkest that can attach to a man of God, the picture of Samuel can be cleansed only by the "Rainbow Bible," which here again shows us by its color-wash that we have once more a confusion of two sources which know nothing of each other and are wholly independent of each other.

Moreover it was not mere childish delight in colored print which

impelled the editors to adopt this process: wherever it was not necessary it has been restricted to the minimum or entirely omitted. Thus, for instance, in the Psalms, only the titles, the musical-liturgical additions and the initials of the Alphabetical Psalms are distinguished by red type, and in Jeremiah the use of colored print was found entirely unnecessary. For from the account in chapter xxxvi. we know authoritatively that the Book of Jeremiah was not created all at once, but in successive stages, so that the writer of these lines was enabled to limit himself to the attempt to give the chronological order of the various parts. In the case of prophetic books in general, and especially in the longer ones,—unless like the Book of Ezechiel they were edited and finished by their own writers,—which is to say in the case of Isaiah and Jeremiah, the first aim of the editor must be the establishment of the correct chronological order. For the Prophets are not simply records of contemporary history, but documents for the history of religion, and we are not to assume that a hero of the spirit thought and spoke just the same things for a whole generation or longer; we are interested here above all in the development of the personality, his views and ideas, and in the case of the prophet these alone can interpret to us the whole man and his significance. The first scholar who ever treated the prophetic books as a whole, the venerable J. G. Eichhorn, of Göttingen, knew this fact and proceeded accordingly in his still important work, *The Hebrew Prophets*, 1816–1819. And as a matter of course the editor of Isaiah in the "Rainbow Bible" has done the same, but in view of the peculiarly complicated isagogic problems in this case, and despite the chronological arrangement, he could not dispense with the color-wash.

This will probably suffice to give some conception of the significance of the "Rainbow Bible" for the treatment of the question of sources, and of its work; I must now throw a little light upon the other side of the work: the criticism of the text. This is almost hidden from the eye of the layman, and is, as it were, a private affair of Old Testament criticism,—but for this very reason it is so much the more necessary to give to the novice some explanatory directions in the matter. It was one of the most important and

far-reaching discoveries for our science when the Göttinger Paul de Lagarde gave the conclusive and convincing proof—though others before him had suspected or hinted at the truth—that all the manuscripts of the Old Testament preserved to us are slavishly faithful copies of one and the same archetype, so that in fact we have but a single text of the Hebrew Bible. This text, or to put it more accurately, the recognition of this text as the only one in existence and the absolutely authoritative one, has its origin in the second century after Christ. Accordingly there are centuries, and in some cases a full millennium and more, between it and the Biblical authors themselves, and in so long a period a text transmitted in manuscript must have undergone many vicissitudes, especially in view of the incompleteness of the primitive Hebrew script, which is such that the incorrect writing of a single letter had very much more profound results than in a Greek or Latin manuscript, and in view of the further fact that a complete change in the written character and an important change in the orthography took place during this period, and also that in ancient Israel the text was not copied with the same scrupulous care as in the later days of Judaism, which had the most detailed regulations for the copying of the sacred books in order to avoid clerical errors. Accordingly, since we have no guaranty that our received text is the original text of the Biblical authors, but since this is on the contrary wholly improbable, Biblical science is set the task of coming, by all the means at its command, as near to that text as possible. We must first of all compare the whole body of transmitted writings, the most important being the translations which were made from the Hebrew original text before its form became fixed and canonical, the Greek, the Syriac, and the Targum; in cases where the body of transmitted writings fails us, we must resort to emendation and conjecture. The greatest theologian of the French Reformed Church, L. Cappellus (d. 1658 at Saumur), the father of the textual criticism of the Old Testament, in his *Critica Sacra*, 1650, proclaimed emphatically the necessity of the resort to conjecture in the interpretation of the Old Testament and demanded explicitly the recognition of its admissibility.

I will give a few illustrations of the use of conjecture in the emendation of corrupt and unintelligible passages. In the famous passage of Daniel ix. 24–27, of the seventy weeks, we read toward the close of verse 27: "And for the half of the week he shall cause the sacrifice and the oblation to cease, and upon the wing of abominations shall come one that maketh desolate,"—this is the only possible translation of the received Hebrew words, but there is no sense in them. The transmitted texts do not help us, for the Syriac agrees exactly with the Hebrew, the Greek evidently resorted to conjecture, but read the same text. The chief objection is to the word "wing," כנף. If we change a single letter here, and read instead כנו, we get the following excellent sense: "And for the half of the week he shall cause the sacrifice and the oblation to cease, and in his stead will come the abomination of desolation," that is, the altar of Zeus, set up in the Temple at Jerusalem by Antiochus Epiphanes. A comparison with chapter xii. 11, "From the time when the daily offering shall be taken away and the abomination of desolation is set up," puts it beyond all doubt that the author of the Book of Daniel actually wrote as we have suggested in ix. 27. A second example, from a very important passage of prophecy. In Isaiah ix. 3 we read: "Thou hast multiplied the nation to which thou hast increased joy," or according to another reading, "to which thou hadst given little joy." Even thus the transmitted text is very unsatisfactory. If we put the words "The people to which thou," in ancient Hebrew orthography רגי לה, into one, רגילה, the resulting word gives the reading, "Thou multipliest rejoicing; thou increasest joy;" and when our verse continues, "They joy before thee according to the joy in harvest; as men rejoice when they divide the spoil," then our emendation assumes the dignity of demonstration.

One more passage, from the Psalms. In Psalm lxxvii. 8 we read: "Is his mercy clean gone forever, is his word past for generation on generation?" Here, instead of the weak and meaningless אמר, "word," we get by the alteration of a single letter, אמת: "Is his mercy clean gone forever; is his faithfulness past for generation on generation?" Mercy and faithfulness stand almost al-

ways in couplets. And now an instance where the Greek text reveals to us an error in the Hebrew. In Psalm xlix. 11 we read: "Their inward thoughts are their houses for ever,[1] and their dwelling-places to all generations, they who called whole countries after their own names." The first word, "their inward thought," in Hebrew קִרְבָּם, is wholly unintelligible and inexplicable; the Greek by transposing two letters read קִבְרָם, and thus we get the intelligible sense: "Graves shall be their dwelling-places for ever," etc.

The Greek translation, being the oldest of all, is of course our chief witness. We owe to it not merely the possibility of correcting numerous errors in the Hebrew text, but the possession of much that is lost in the Hebrew version. 1 Kings xvi. 21–22, we read after the account of the end of Zimri, "Then were the people of Israel divided into two parts: half of the people followed Tibni, the son of Ginath, to make him king; and half followed Omri. But the people that followed Omri prevailed against the people that followed Tibni the son of Ginath; so Tibni died, and Omri became king." For the last words the Greek Bible reads: "In that time Tibni and his brother Jehoram died, and Omri became king after the death of Tibni." It is evident that the Greek version is fuller and older here, and the Hebrew in comparison abbreviated and corrupt.

Of course, the objection might be made that there is no vital interest in knowing that a brother of Tibni, by the name of Jehoram, played a prominent part in that civil war. But there are really many valuable things which we owe to the Greek Bible.

We hear repeatedly in the Old Testament of "Urim and Thummim" as the vehicle of the priestly oracles among the ancient Israelites. What Urim and Thummim was, and how the oracle was interrogated by means of it, we should not be able to guess even approximately if we had not the Greek Bible. After the victorious battle at Michmash mentioned in 1 Samuel xiv, Saul does not succeed in destroying the Philistines in the pursuit; the oracle is ques-

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[1] The verb is supplied: the English translators read: "Their inward thought is that their houses shall continue forever."

tioned as to whether the pursuit shall be continued, but it gives no answer. Thereby Saul recognises that the wrath of Jahveh must rest upon Israel on account of some offence. Now in order to ascertain who the guilty ones may be, all the nobles of Israel, as representatives of the people, are to go upon one side, and he and his son Jonathan upon the other. And now according to the Hebrew text Saul introduces the ceremony of casting lots with the words, "Then spoke Saul to Jahveh, the God of Israel, Give truth!" and continues, "And Jonathan and Saul were taken, but the people escaped." (verse 41). The words which are here translated, "Give truth" are of themselves very surprising and difficult, but scarcely permit of any other interpretation. Instead of this the whole verse runs in the Greek Bible: "Then said Saul: Jahveh, God of Israel, why hast thou given thy servant no answer this day? If the guilt be upon me or upon my son Jonathan, then Jahveh, God of Israel, let Urim come forth; but if the guilt be upon the people of Israel, let Thummim come forth. Then Saul and Jonathan were taken but the people escaped." From these words we may infer that Urim and Thummim were two different objects or figures, the Urim, perhaps, white, as is suggested by the etymological meaning of the word, 'light,' 'brightness,' the Thummim black; if in casting the sacred lot the Urim came forth, this signified an affirmative answer to the question addressed to Jahveh; the Thummim indicated the negative; if neither came forth, this indicates that Jahveh did not wish to give an answer, which was a sure sign that he was angry.

I ask once more: Shall such important and significant matters remain the private property of the learned guild, or is it not perhaps the duty of science to communicate them to all who are interested in the matter and who seriously desire instruction? And so the work of text criticism in the "Rainbow Bible" is also necessary; the educated public has a right to it, and would be wronged if it were withheld.

On the relation of the new English translation to the older one I have, as a foreigner, no right to express an opinion, but the English reader of the Bible can form one for himself in a few minutes

by comparing a few verses or chapters in the two versions. I do not hesitate to declare that the translations have received especial attention (having been made under the literary supervision of Dr. Furness, the well-known Shaksperian scholar), and that the workers on them have given their best powers to the task.

A word also about the illustrations. The publisher has deliberately avoided the danger of making the "Rainbow Bible" a mere picture-book. No one will deny that pictorial representations in moderate quantity and appropriate selection constitute a leading attraction and an essential medium of aid and instruction in such a work, and the reader of the Bible will certainly be grateful to the publisher for having included them. For who is not interested to be able to see a great number of the most familiar Biblical localities in excellent reproductions, some larger, some smaller? And the numerous copies of old monuments and antiquities give us a better introduction to the objective interests of the Bible than the most detailed descriptions. As especially valuable and sure of arousing general interest I refer to the Appendix to the translation of the Psalms, "The Music of the Ancient Hebrews," in which fifty-one plates give us something like a history of musical instruments. The ethnographic map of Palestine in the eleventh century before Christ, prefixed to the translation of the Books of Judges, is also a very graceful and instructive supplement. The make-up of the work, both the edition of the Hebrew text and the translation with its commentary and illustrations, is above praise, so that even from a purely bibliographic point of view the "Rainbow Bible" is an ornament for any library. May it be widely used, and conserve what has been the sole aim of the editors: to spread among the remotest circles the understanding of the Old Testament, and along with understanding also love, and to give to anxious and hesitating souls also the conviction that Biblical critics have not labored in vain, and that these much abused and much assailed laborers are not like the foxes who destroy the vineyard of the Lord, but would gladly see Zion built up, her stones and her mortar made ready. (Psalm cii. 15).

We wish to build, not destroy; and where we tear down it is only to clear away the rubbish and ruins and level the ground for a new and solid structure, to satisfy ourselves because our scientific conscience demands it of us, and as we hope, for the instruction and edification of great numbers!

BRESLAU, GERMANY. C. H. CORNILL.

THE POLYCHROME BIBLE.

THE EDITOR of *The Monist* in a very courteous note asks me to give him my opinion of the Polychrome Bible. I take pleasure in complying with his request.

In its mechanical execution and as a specimen of typography it deserves high praise. No pains or expense has been spared in its production. Its elegant pages of clear and beautiful type and faultless printing delight the eye. The devices employed to accomplish the special purpose of the publication are exceedingly ingenious, evidencing much care and thought in their contrivance and the most minute and laborious oversight in securing a surprising degree of accuracy in the use of a system of signs which is necessarily very complicated. The printing in colors is by a novel process which admirably serves the end intended, and neither mars the distinctness of the lettering nor defaces the page.

The scholarship displayed in the work is exceedingly creditable. I have great respect for the learning of its projector, Dr. Haupt, and that of his collaborators, who are men occupying conspicuous positions and eminent for their attainments. As a matter of course those only have been engaged to do the work, who are in sympathy with the project itself and disposed to aid in its accomplishment. This is a limitation necessarily involved in the plan of the work, and is not therefore censurable. It gives indeed a one-sided aspect to the publication, and makes it embody one particular class of views instead of exhibiting a complete survey of matters at issue on all sides. But it is entirely legitimate for a man of decided convictions to advocate what he believes to be true and right,

and to associate himself with others who are of the same mind in their advocacy. Unity of aim is necessary to the accomplishment of his purpose. The introduction of discordant voices would be suicidal and would defeat the design of the whole. No scheme can be carried successfully through, unless its promoters are in substantial accord. A house divided against itself is brought to desolation. Only those who use these elegant and attractive volumes should be aware of the restriction placed upon them by the very plan of the publication and the mode of their preparation, and should not expect to find in them what they are not intended to give. They furnish the presentation of but one side of the case and leave room for the application of the adage *Audi alteram partem.* There is something to be said upon the other side, which impartial men should listen to before definitely making up their minds to accept the conclusions here offered to them with so much confidence and such a show of learning.

The object of the publication is quite intelligible and in a sense commendable, as has already been intimated. It is intended to exhibit the present state of Biblical science, or the results of inquiry into the origin and constitution of the books of the Old Testament, as these are viewed by the advanced wing of modern critics. It is certainly proper for a body of scholars to lay before the public the conclusions which they suppose themselves to have reached in the course of their investigations. It is not only their right in the interest of free inquiry thus to express their minds and to invite attention to the reasons upon which their conclusions are based, but it is of advantage both to students of the Bible and to the general public which feels a profound interest in all that concerns the Bible. To the former class, the students of the Bible, these volumes are serviceable in so far as they offer for consideration a chapter in the history of opinion about the Bible, and they do this in a most effective manner by exhibiting to the eye at a glance what verbal description labors to convey, but can only be apprehended with great difficulty after the most painful and long-continued attention. They are to those engaged in critical inquiry what maps are to students of geography, or pictorial representations and topographical

plans to lovers of scenery, giving a clear idea of the mutual relations of the various objects depicted, such as one strives in vain to gain from reading or hearing about them. The problems that are discussed in critical investigations are so recondite and abstruse, and involve such a multitude of minute and complicated details, that the mind is wearied and confused in the attempt to grasp them; and it is of unspeakable service to have the results plotted before the eye so that one can readily gain an intelligent comprehension of the scheme of critical partition here proposed in all its multitudinous ramifications. The student has here outlined before him in the notation adopted and the significant colors employed, a clear and intelligible presentation of precisely what each of the contributors means to convey in regard to the constitution of that book of the Old Testament which he is discussing. And he is in consequence at no loss to assign to each statement made and each argument that is urged its proper place in the general scheme.

This work has also its value and importance to the general reader. There are few who are not concerned to know what is said and taught about the Bible. I suppose that it can be said without exaggeration, and that no one, whatever his own personal attitude towards the Bible may be, will be disposed to dispute it, that there is no book in the world in which a livelier and more profound interest is felt, and none which has exerted a wider and more beneficent influence. The higher criticism of the Bible has been for some time paraded before the public at large. It is no longer confined to the professors' study or the students' lecture-room. It has been thrown broadcast before the masses, and has been freely set before those at least who read and think on serious subjects. And it is by very many inadequately apprehended. Vague notions of its methods and results are abroad everywhere, while few have the patience or inclination to undertake the labor of acquainting themselves thoroughly with questions of such inherent difficulty and intricacy. It is no small advantage to such to have the whole matter spread before them in a lucid manner and in a shape easily understood. The real drift of the style of criticism set forth in these volumes can readily be ascertained by a simple inspection of them.

The extent and the tendency of the revolution in sentiment concerning the Bible here aimed at is at once appreciable. The issue that is raised is clearly seen, and can neither be minimised nor exaggerated. Those who have been led to infer from statements repeatedly made by admirers of the advanced school of critics, that reverence for the Bible and confidence in it as an inspired rule of faith and life are not diminished but increased by accepting their conclusions, can here judge for themselves whether these are matters of slight consequence, and whether they do or do not impair the regard in which the Scriptures have hitherto been held. And those who have ignorantly taken up groundless prejudices against higher criticism, and have imputed to it that with which it is not fairly chargeable, can here have an opportunity to correct their false ideas of the subject.

The advantage attributable to this publication of imparting a clearer notion of the opinions held by the advanced school of Biblical critics requires, however, a twofold qualification in order to make it strictly accurate. Some overzealous admirers of the Polychrome Bible have claimed that it is the ultimatum, the *ne plus ultra;* that in it is reached and embodied the final result of critical inquiry respecting the books of the Bible, of which it would henceforth abide as the lasting monument, beyond which nothing is to be expected or desired. I am pleased to see that Professor Cornill, whose essay on the subject has been obligingly sent to me, entertains no such Utopian idea. He frankly confesses:

"Upon the ground of my own and others' work in the past seven years, I myself would to-day decide differently in many details concerning Jeremiah from my conclusions of 1892, when I finished my edition of the text of this book."

And Professor Cornill would without doubt be equally ready to admit the possibility of his changing his views in the next seven years in regard to some things which he holds and advocates at present. Those who remember the successive tergiversations through which critical opinion has passed in the century now closing, and especially the sudden and remarkable revolution in critical sentiment in the last three decades, in which Graf led the way,

followed by Kuenen and Wellhausen, and who have observed the frequency and extent with which novel suggestions are broached from time to time by Stade and others with more or less approval from critics of their own class, will not imagine that the end is now reached, or any thing like it. It would not be surprising if the work before us should be overtaken by the same fate which is apt to befall maps of countries whose boundaries are liable to great and frequent changes, or charts that mark soundings where treacherous seas obliterate their former coasts and shift their sandy bottoms and their dangerous shoals with each recurring storm. If things continue to move on as they have done in the past, and as they seem to be doing now, these volumes may in no long time be left by the onward sweep of the current, its lines of partition become antiquated, and its carefully indicated notation cease to represent actually existing critical opinion, and be valued only as a record of what was once believed, but has since been abandoned.

The record of critical opinion furnished by the Polychrome Bible has another limitation inherent in the very nature of the enterprise. It cannot, as we have already seen, be regarded as the settled and final conclusion of that class of critics from which it has emanated; but to this it must be added that it does not even represent the existing consensus of these critics in the present stage of their investigations, or shall I rather say their speculations. So far from exhibiting what has their unanimous approval, or what can even be accepted as the verdict of the majority, it is in the case of each book of the Old Testament only the individual opinion of that particular scholar to whom its critical treatment was committed. The first issue in the series was the book of Job. Not long after its appearance Professor Budde published a commentary on Job, embodying a widely different conception of that marvellously beautiful poem. A large proportion of the passages alleged in the Polychrome edition to be interpolations are vindicated by Budde, and especially six consecutive chapters, xxxii–xxxvii, which are marked as a later addition by another author, are declared by Budde to be an essential part of the book as originally written, without which the plan of the whole would be marred. And Pro-

fessor Cornill in his Introduction to the Old Testament also enters his protest against such a mangling of this book in the following energetic language:

"The heart is thus torn out of the whole book, and there remains a body the beauty of whose form one can wonder at and admire, but which lacks the living, quickening soul, and with which we cannot enter into a personal cordial relation."

Like individuality of sentiment might be pointed out in the remaining books of the series. And, which is especially unfortunate, there is nothing to indicate what is merely the notion of one particular critic, or to distinguish it from the views held in common by the rest of the fraternity. As far as appears, all stands on the same level. And he who consults these volumes desirous of knowing what is the general opinion of the critics of this class, can have no certainty in individual cases whether what he finds has any other endorsement than that of a single critic who here stands almost alone in his opinion.

Thus far the Polychrome Bible has been regarded as a record of critical opinion about the Bible, and both its advantages and its disadvantages in this respect have been considered. Is it likewise an aid to the proper understanding of the Bible? This, it will be perceived, is a totally different question, and will require a separate examination. In the department of archæology the pictorial illustrations are carefully selected, well executed, and will prove helpful to the reader by giving him a more accurate conception of the places mentioned, and the objects belonging to early periods and remote regions which are referred to in the Bible. In the department of criticism, however, in all questions relating to the unity, integrity and original constitution of the books of the Old Testament I feel bound to give a different judgment.

To avoid all misconception on this point, allow me to preface what I have to say by the statement that I am no foe to Biblical Criticism. I am an earnest believer in the right and the duty of the most thorough and searching inquiry into the origin, the authorship, the trustworthiness and the general character of the books of the Bible. Any light that can be thrown upon these subjects

from whatever quarter is to be welcomed. What is really wanted is to know the truth, and the whole truth, and to sift out as far as practicable any errors or misconceptions that are or have been entertained about them. The more exactly we can ascertain the original environment of any literary production, the better we shall be able to understand and to appreciate it. This is as true of the books of the Bible as of any other writings, ancient or modern. The sacredness attached to any volume by ourselves or others is no bar to the most rigorous investigation of everything connected with it. If it proves worthy of our regard, let us esteem it accordingly; if unworthy, let us reject it. The opinions which have been entertained regarding it in ancient or in modern times are serviceable to us in making up our own minds according as there is reason to believe that they are or are not well founded.

If we have trustworthy testimony reaching back to the time when books claim to have been written, and we find that they have been uniformly referred to the date and the author which they assert for themselves, and if moreover they are in accord with their alleged origin and surroundings we have the strongest possible reason for believing that their statements concerning themselves are true. This is the impregnable base upon which the genuineness of the Mosaic legislation and the Mosaic writings rests. And the speculations of modern scholars cannot unsettle it.

When critics, however learned and able, desert the ground of external evidence, and rest their conclusions upon internal linguistic phenomena and subjective impressions, there are examples enough to show how easily they may be misled by their own ingenuity, and mistake their fancies for facts. Cicero expressed his opinion of the arbitrary manner, in which the early critics of Homer dealt with the great poet, by saying that Aristarchus marked as not genuine whatever he did not himself approve. In more modern times the genuineness of one of Cicero's orations against Cataline was questioned by the eminent classical critic Wolf. Others followed in the same line, until at length three out of the four attributed to him were confidently declared to be spurious. And yet Cicero himself in one of his letters speaks of the whole four and

claims them as his own. Speculations were at one time rife about the introduction to Goethe's Faust. It was asserted to be clearly demonstrable that one portion was written in the youth of the poet, and another added by him in his later years. One breathed the ardent spirit of a young man buoyant with hope; another bore the marks of disillusioned old age. The partition was widely accepted as well proven; until the bubble burst upon the discovery of Goethe's original manuscript proving that the whole was continuously written, and the imagined differences of style and sentiment vanished into air. Another instructive instance has just been given to the public in the recently edited manuscripts of Lady Louisa Stuart, the friend and correspondent of Sir Walter Scott. In a letter to Sir Walter, page 237, just after his public acknowledgment that he was the author of the Waverley Novels, she tells him of the arguments that had been in circulation to prove that he could not have written them. "In reasoning on the books themselves, Old Mortality, for instance, was plainly written by three or four different hands; people could point out traces of the patchwork, which it was perverseness or want of taste not to distinguish."

Astruc in the middle of the last century ventured the hypothesis based on the alternation of the divine names in the Book of Genesis, that it was compounded from two principal documents, one of which was characterised by the use of Elohim (God), the other by that of Jehovah (LORD). This has been elaborated by a long succession of eminent critics from that time to this, until it has reached a form which is exceedingly ingenious, is defended by very plausible arguments, and has gained great prevalence. My study of the subject, however, has led me to side with those who regard the hypothesis as unfounded. Hence I feel obliged to say that in my judgment the Polychrome Bible is altogether misleading in partitioning the Pentateuch in accordance with it.

The readiness with which a narrative of acknowledged unity can be parcelled into parallel and seemingly conflicting accounts, is illustrated in my Higher Criticism of the Pentateuch by the parables of the Prodigal Son and the Good Samaritan. And Professor

Mead has shown under the pseudonym of E. D. McRealsham that the Epistle to the Romans can be partitioned into four parallel parts distinguishable in diction and in doctrine with as much plausibility as the same thing can be effected in the Pentateuch.

The plea of Professor Cornill based on apparent discrepancies is chargeable with undertaking to measure these ancient records by modern ideas. If he would but apply the standard of the ancient writer instead of his own, the things which he now regards as "incomprehensible, contradictory and often absolutely senseless" would appear to him in a different light. The writer who records the patriarchal history, or, if the Professor pleases, the writer who records the dates relating to the patriarchs, considers Abraham, Isaac, and Jacob as belonging to a longlived race, and reaching the age respectively of 175, 180, and 147 years. They are not on the same plane with a generation whose limit of life is 70 or 80 years, and only in a very few exceptional cases is extended to 100. In the opinion of the Professor "we stand here in the territory of legend." I believe it to be veritable history. But whether it be legend or history makes no difference in the matter which is now immediately before us, viz.: the propriety of parcelling the narrative into two or three separate accounts. To the writer ninety years might be beyond the ordinary period of child-bearing for women, but not marked by decrepitude or loss of vigor and bloom. Sarah at that age might possess all the attractions of a lady in middle life, and that her hand should be sought by the king of the Philistines is not surprising. It is to be observed that it is not said as in the case of Pharaoh years before that he was enamoured of her beauty. Abimelech may have thought it desirable to form an alliance with a prince like Abraham with such a body of retainers. That Abraham had several sons after the death of Sarah, whom he survived 38 years, would in the estimation of the writer not be unlikely. His previous childlessness is always attributed to Sarah's barrenness, with whom he lived 25 years and we do not know how much longer with no prospect of an heir. It is this fact which makes the birth of Isaac such a miracle.

The original writer is not responsible for the error of the Greek

version Gen. xxi. 14, which makes Abraham put Ishmael on Hagar's shoulder when he sent her away. He says nothing of the sort. That "she cast him under one of the shrubs," faint and exhausted as he was from excessive thirst, does not imply that he was an infant, any more than the same inference can be drawn respecting the sick who were cast down at Jesus' feet to be healed, Mat. xv. 30. Jerome remarked long ago that Hagar's taking him by the hand, ver. 18, shows that he was her companion, and not carried by her. And the offence, for which he was sent away, ver 9, was surely not the innocent laughter of a babe.

That Rebekah was sufficiently fair to attract suitors after she had grown-up sons is by no means inconceivable from the writer's point of view. Jacob going to Haran for a wife at 71 would create no embarrassment to a writer, who relates Abraham's emigration to Canaan when 75, and his death at 175.

In insisting that the whole of what is related in Gen. xxxviii must have taken place after Joseph was sold into Egypt, the Professor overlooks the common usage of good writers to subordinate exact chronological sequence to clearness of narrative. The principal incidents of the chapter, the affair of Judah and Tamar and the birth of her children, are no doubt in their true chronological place. But the introductory matter, the marriage of Judah and what is said of Er and Onan, is inserted here in order that the whole story may be told connectedly, and not be confused by being mixed up with other things that stand in no relation to it.

A few words of explanation are necessary in order to put in its true light the account of Jacob's family at the time of his descent into Egypt. In the view of the writer this is the point of transition from the family of Jacob to the nation of Israel. The twelve sons of the patriarch give name and shape to the twelve tribes. And by comparing Gen. xlvi. with Num. xxvi. it will be seen that from the same point of view the sons of these twelve patriarchs determine the tribal divisions of the nation or its so-called families. It is natural, therefore, that this subsequent organisation of the nation should have to some extent a retro-active effect upon this family table. The great bulk of the names recorded in Gen. xlvi.

represent the descendants of Jacob who accompanied him into Egypt. But it is quite supposable that a few of the so-called families in Israel sprang from the grandsons of Jacob born in Egypt. It is expressly said of the sons of Joseph that they were born in Egypt, and yet they are included in the list of those "who came into Egypt." It is altogether probable that this was also the case with the sons of Pharez, who were substituted for Er and Onan who died in Canaan, and with some of the sons of Benjamin; in fact, a portion of those so classed were his grandsons as we learn from other passages. Thus the list, while not absolutely corresponding with the words by which it is introduced, is substantially accurate; the reason for the few exceptional additions is obvious, and the rule holds, *Denominatio a potiori fit.*

If the considerations now adduced are taken into the account, the alleged difficulty about the families of Judah and Benjamin vanishes entirely. Jacob's reluctance to part with Benjamin and his solicitude for his safety were not due to his extreme youth and helplessness, but to his being the only remaining son of his favorite wife. And if he was "far along in the thirties," why might he not have a family?

If the superficial reader of Genesis is surprised to learn that Abraham lived to see Jacob and Esau fifteen years old, and that Isaac survived the sale of Joseph into Egypt, it is from his failure to notice the uniform plan on which the book is written. The narrative of each patriarch's life is brought to a formal close when his son succeeds to the headship of the family. The history is divided into sections each of which has its prominent figure, and his life is summed up by the mention of his death before proceeding to the next section, the writer in this following the topical instead of the strictly chronological order. That Isaac when upwards of one hundred and thirty years of age said, "I am old; I know not the day of my death," and yet lived nearly fifty years longer, was surely not incredible from the standpoint of a writer who attributed a vastly greater longevity to other patriarchs.

The inference from the ages of Noah and Shem, that the former was fifty-eight years the contemporary of Abraham, and Shem

fifty years with Jacob and Esau, rests upon the assumption that the genealogies in Gen. xi. is continuous with no omission of names in the entire line of descent. If so, it would be out of analogy with Scripture genealogies generally, as an examination of them would show. And the terms in which this genealogy is drawn up do not require such a supposition. Words denoting filiation are used with great latitude of meaning in other cases, cf. Gen. x. 15–18, xlvi. 15, 18, 22, 25, 26. Mat. i. 8, "Joram begat Uzziah," his great-great-grandson; and in ver. 1 Jesus Christ's descent from Abraham is traced in two steps. Genealogical statements are to be interpreted by the usage of the times when they were made. It would be no departure from this usage to say that Gen. xi. 10–26 determines the line of descent from Shem to Abram, but not the number of links in that line. "Shem begat Arphaxad two years after the flood," may mean that he then had a son who was the ancestor of Arphaxad. And so of other links in the same genealogy. This has no bearing upon the question of the critical partition of Genesis, with which we are now particularly concerned. But I may be permitted here to express my belief that the current usage of deducing a pre-Abrahamic chronology from the genealogies in Gen. v. and xi., and labelling it the Biblical chronology, is based on a mistaken interpretation of them.

It has now, as I think, been conclusively shown that the various passages above considered contain nothing "incomprehensible, contradictory or senseless," when viewed from the standpoint, not of the present duration of human life, but of the writer who records the ages of the patriarchs. And so far from their creating a necessity for critical partition, they are quite consistent with the ideas of the writer, and perfectly intelligible as the product of his single pen. It is only necessary for the reader to put himself in sympathy with the writer to find all plain and natural. There is no occasion to seek relief in the assumption that divergent traditions have here been blended, which the Polychrome edition can be relied upon to disentangle.

But while the partition is of no benefit to the reader, it is a positive and serious injury. It rends asunder a production which

can only be properly estimated and understood in its unity and completeness. It sunders parts which are intimately related and mutually dependent, and which derive much of their significance from their combination. Thus the meaning and value of the life of Abraham is obscured by a partition which separates its chronology from its events. Patient, trustful waiting for the fulfilment of God's promises in spite of all adverse appearances is the great lesson to be learned from his history, which is the record of a long series of trials by which his faith was disciplined and strengthened, until he was finally able to bear the sharpest trial of all without shrinking. The time expended in this process of training is an essential element of its impressiveness and power. But when as in the critical partition the years of Abraham's life are put in one document, and the events which mark the course of the divine dealings with him in another, both are seriously marred. It is only when they are put together that the full meaning of the whole becomes apparent. We read in one document that after Abraham had been ten years in Canaan, he married Hagar and had a son by her; but this stands in no relation to any divine promise, for no allusion has been made to his having received one. We read still further that when he had been twenty-four years in Canaan, God[1] appears to him and promises him a son, a numerous progeny and the possession of Canaan. But no mention has been made of any previous divine communication. All these years have been devoid of any divine leading, of any trial of faith or any exercise of it. And the emphatic repetitions which abound throughout the whole of Chap. xvii. are suggestive of nothing but the aimless and tedious verbosity of a wordy writer. We turn to the other document. Here we read that Abraham went to Canaan by divine command, and immediately upon his arrival received the promise of a numerous seed, the possession of Canaan, and that all nations should be blessed in him. These promises are again and again renewed and made more and more specific. As he has no child he begins to

[1] The Hebrew text has Jehovah, but as this is the wrong name for this document according to the ideas of the critics, they change it to Elohim.

think that his steward will be his heir, but fresh assurance is given him that he shall have a child of his own body. He then at Sarah's suggestion takes Hagar and thinks her child may be the one intended. This error is corrected, and he is told that he shall have a son by Sarah, which is fulfilled the ensuing year. But no intimation is given of the length of time thus consumed; and no one would imagine from this narrative, impressive as it is, the immensity of the strain to which the patriarch's confidence in God was subjected, nor the real magnitude of the lesson which was finally taught him.

It is only when we disregard the critical partition, and read the undivided narrative as a whole that we find that he was required to depend upon the sole, unsupported word of God for four and twenty long and weary years, in spite of his own and Sarah's advancing age, and without an indication that he was likely to have the son upon whom all the rest of the glowing promises made to him depended. And now for the first time we come to understand that the reiterations of Chap. xvii. are addressed to a man whose hopes have flagged and whose patience is worn out by long and fruitless expectation, and that instead of being merely a useless accumulation of words, they are designed to lift him out of his despondency and rekindle the faith that had almost expired. Now too we can comprehend what was before inexplicable, the marvellous scene without a parallel in the Old Testament,[1] which is set before us in Chap. xviii., Jehovah in human form visiting Abraham and taking a meal in his tent. It is not to be reckoned one of this writer's extravagant anthropomorphisms, nor put on a level with the tales of heathen mythology. We are at the initiation of that covenant relation which underlies alike the Old and the New Testament dispensation of revealed religion. It is a unique situation, and is marked by a divine condescension altogether unique. Abraham has on his part ratified the covenant made with him by the rite of circumcision, and thus attested his faith in God's promise

[1] The nearest approach to it is Ex. xxiv. 9–11, where the covenant here consummated with Abraham is renewed with his descendants at Mount Sinai.

prior to its actual fulfilment. Jehovah had previously ratified it on his part by a significant emblem, xv. 17, 18. And now this engagement which has been ratified in succession by both the contracting parties, is formally solemnised by the Most High partaking of a meal in Abraham's tent.

The injurious effect of the critical partition, which has now been shown in this single instance, could be illustrated from every page of the Polychrome edition. It mutilates the narrative, impairs its beauty and impressiveness, deranges the writer's plan and obscures his meaning, creates unfilled chasms and seeming discrepancies which have no real existence, and allows a sense to be put upon passages which is quite impossible in their proper connexion. In fact, the fresh light which the critics boast of throwing upon the Bible by their labors is largely due to severing passages from their environment and interpreting them without regard to it, and not infrequently in a manner totally inconsistent with it.

I shall now as briefly as possible refer to the other passages, in which the Professor thinks the partition to be serviceable. He finds great confusion in the narrative of crossing the Jordan, Josh. iii., iv. I can discover none. The whole transaction is distinctly related. The repetitions, which occur in the course of it, and which emphasise its miraculous character, are introduced to make it clearer. In giving his general directions to the people in advance Joshua bids them select twelve men without as yet explaining what they were to do, iii. 12. When the time arrives for them to act, the purpose of their selection is stated by the Lord to Joshua, and by Joshua to the men themselves, iv. 1–7. The Lord's charge to Joshua on this subject is here given entire, including the order to select the men, which though previously delivered and acted on, was not mentioned at the time. These men obey the directions given them, ver. 8, and as they are acting in the name and on behalf of the people, the people are said to do what is done through their representatives. In addition to the twelve stones carried from the midst of the Jordan to their lodging-place, twelve more are set up in the bed of the river itself. The priests with the ark remain in their place in the bed of the stream until everything is accom-

plished, when they too pass over. It is hard to see how any intelligent reader can find difficulty here, or what advantage can be derived from splitting this plain and consistent narrative into two conflicting accounts.

When Saul was chosen king, 1 Sam. x., it is significant of his own modesty and the simplicity of the manners of the time that he did not at once assume regal state, but quietly returned home and resumed his ordinary occupation. A band of men escorted him to Gibeah, but he established no court, and assumed no functions of royalty, until an occasion arose for their exercise. Jabesh-Gilead was invaded by the Ammonites, Chap. xi., who undertook to impose cruel and disgraceful terms of surrender. An armistice was asked for, that messengers might be sent to all the coasts of Israel. It does not appear that their messengers went anywhere but to Gibeah where Saul resided. While they were telling their story to the excited people Saul came in from the field and learned the cause of the excitement. He at once assumed the conduct of the whole affair, sent word to all Israel, gathered an army (for there was no standing army that he could summon), and raised the siege. There is nothing in all this to imply that he had not yet been chosen king, but the reverse. It is besides explicitly alluded to in the popular demand, ver. 12, that those who had opposed his election should be put to death. And now, when he had thus demonstrated his fitness for the post, he was formally inaugurated. To split this narrative leaves both parts of it incomplete.

Saul laboring under a disordered mind wished some one to soothe him by playing the harp. David was recommended to him and was sent for. When he appeared Saul liked him very much, appointed him his armour bearer, asked his father Jesse to let him remain, and was refreshed by his music. Some time after David had returned to his father, there was war with the Philistines, and David, who had been sent to visit his brothers in the army, offered himself to fight the champion Goliath and killed him. When the contest was over, it appears that Saul had failed to recognise him. This is somewhat surprising, as David had been his personal attendant some time before. But what length of time had elapsed,

how David might have been changed in dress or appearance, and how far Saul's malady may have affected his memory, we do not know. Too many instances occur of persons failing to recognise those whom they might be expected to know to justify any one in denying the consistency of this narrative and rending it asunder on this ground.

Saul in his fits of frenzy repeatedly threw his javelin at David and plotted against his life, 1 Sam. xviii., xix., and yet Jonathan succeeded in mollifying him, and obtaining his promise that David should not be slain, xix. 4–7. Consequently, when a fresh outburst of jealousy had obliged David to flee for his life, he came back to Jonathan to ask what he had done to merit this hostility. Jonathan, knowing his father's changeable moods, endeavors to reassure him, but on consulting Saul finds him determined to slay David. The fluctuations in Saul's mind toward David are so marked during his whole career, that they afford no pretext for sundering the narrative as though different and irreconcilable accounts were here blended.

It is very well to indicate in Chronicles precisely how far its language is identical with that of Samuel and Kings, and how much additional matter it contains. To this extent the alternation of colors is serviceable to the reader.

There is considerable difficulty in discriminating accurately between the sin-offering and the guilt- or trespass-offering of Lev. iv., v., but careful study shows that while they are intimately related, there is a clear distinction between them. The entire ceremonial legislation is one system, the outgrowth of the same fundamental ideas, and bears the mark of one organising mind; so that the division of it into separate strata as though these were of diverse origin is productive of confusion and error.

The Professor thinks it necessary to sunder Gen. xxx. from xxxi. in order to save the credit of Jacob, whose speech to his wives in the latter chapter is infamous unless this is done. In my opinion by separating these chapters the very point of the whole narrative is missed, and the Professor's indignation is directed to the wrong place. Jacob is not censurable in Chap. xxxi., but in

Chap. xxx. The sacred narrative does not conceal the faults in Jacob's character and conduct; and the record of his life is an account of the discipline by which these faults were corrected. He from the first used unworthy arts to secure what had been divinely promised him, instead of trustfully waiting for the providence of God to bring it about in a legitimate way. So he took advantage of Esau's faintness to make him yield his birthright, and imposed upon his blind and aged father to obtain his blessing. As a providential retribution he was obliged to flee for his life, and Laban defrauded him as he had defrauded his father. When Laban made hard terms with him for the care of his cattle and tried to overreach him by changing his wages repeatedly, his old nature was too strong for him, and he yielded to the temptation to match and counterwork Laban's wiles by artifices of his own, instead of dealing in an honest and straightforward way, and leaving it to God to rectify his wrong. But the angel of God showed him in a dream, xxxi. 10–12, that his successes were not due to his own clumsy and ineffectual devices, but to divine interference on his behalf. Thus cured of his error, he could properly speak to his wives as he does, xxxi. 5–9.

The Professor further thinks it necessary to separate the beginning of 1 Sam. x. from the close of the chapter in order to exculpate Samuel from a pious fraud to accomplish selfish ends. And the reason is because he cannot comprehend how Saul could be privately designated by Samuel as the future king and afterwards publicly chosen by lot, unless the lot was fraudulently manipulated by Samuel himself. The Bible is full of instances of immediate divine intervention. And he who undertakes to expound the Bible in accordance with the theory that such intervention is impossible, must perpetually draw upon his imagination to give a different color to its facts. The writer of this narrative believed that Samuel was a true prophet of Jehovah, who acted under immediate divine guidance, and that when the lot is cast the whole disposing thereof is of the Lord. There was not the slightest reason, therefore, why he should not record the facts as they lie in this connected narrative without attaching any suspicion to Samuel. And if any one is

out of sympathy with the teaching of the Bible from beginning t end, he may do the best that he can with its supernatural facts.

I cannot at the close of this article, which is already too long enter upon the question of textual criticism. It is one upon whicl there is great diversity of judgment among scholars. I shall do n more than simply express my opinion that some at least of the con tributors to the Polychrome Bible have made too free use of th Septuagint and of critical conjecture, and have in consequence lef the text in a worse condition than they found it.

W. HENRY GREEN.

PRINCETON, N. J.

THE BIBLE.

OF all the books in the world there is none that has exercised a greater influence than the Bible. Considered from a purely secular standpoint, the Bible is a most wonderful piece of literature, which surpasses in importance anything that has elsewhere been produced. In addition to this purely historical statement of fact, we must grant that the Bible contains sayings of deep wisdom, of wonderful inspiration, of comfort in trials and tribulation, and is at the same time a collection of the most valuable records obtainable of the evolution of religion.

Considering the paramount importance of the Bible, it is not at all to be wondered at that some of its admirers should have developed the theory of its divine origin and authorship, and set it apart as a holy book, which has become the religious text-book of nations; and its very letters have been deemed too sacred to be tampered with or criticised. It was esteemed so much above all human wisdom that it became the foundation-stone of the religion of numerous Jewish and Christian sects, and is still regarded by many with a religious awe, as being literally the word of God, and the sole expression of divine revelation.

We all know the powerful influence which the Bible has exercised upon the world of *belles lettres*. We know how many great men educated themselves by reading the Bible, by taking it as a model for forming their thoughts and literary style. How deeply was a broad yet decidedly worldly man like Goethe affected by both the Old and the New Testament; how glowingly wrote a man of natural science like Humboldt of the poetry of the Psalms; and

how many traces did the legal principles of the Old Testament leave on the legislation of England.

No doubt the Bible is a book of extraordinary significance and peculiar strength. Yet the exaggerated pretensions of its religious admirers are apt to offset all its beauty and grandeur, and have actually exposed the Bible to a ridicule which is unjustified if it be regarded from the purely secular standpoint. But if the Bible were indeed in a specific sense "the word of God"; if its origin were due to a special revelation actually indited by the Holy Spirit; if the Bible as a whole were actually a systematic unity which has originated somehow as a product of divine providence; and if the real author (or as it were, the real editor-in-chief) were God himself, who simply utilised the pens of a number of Jewish priests and prophets as a writer of modern date would use stenographers and typewriters, or as a minister of state proclaims the principles of his policy through the reporters of the government press: the Bible would not only lose the prestige which it deserves, but would be degraded into a piece of patch-work of the most abominable and undignified character, tending to render religion ridiculous and to throw Christianity back to the level of pre-Christian Paganism.

I must confess that I myself passed in my childhood through a phase of Christian belief to which a literal acceptance of the Bible as the word of God seemed indispensable, and I have surrendered this conception of Christianity only after a hard struggle in which I passed through successive stages which finally landed me at the ultimate consistent result of criticism in the negation of all religious truth. I have regained a religious ground only through radically abandoning all untenable positions and allowing criticism to have its own way, giving to science what belongs to science, without reserve or without fearing any one of its incidental resultants, and by grounding my world-conception upon the immediate facts of experience, that is to say, upon life itself, upon the wants of the human heart, its hopes and fears, its wrongs and redresses, its sufferings and consolations; further upon a consideration of the conditions under which man originates, the factors which shape his destiny, the aim toward which the evolution of life tends, and the signifi-

cance that can be discovered in life. The richest source consists in the interrelations of human society, with their demands, their sorrows and joys, and especially the duties of life with all that they imply. The complicated world of our surroundings exhibits to the thinking man a definite order, which shapes all things and us too, which dominates life as an ultimate authority for our conduct. It is a power that we must heed,—a power which, however, is not a power in the mechanical sense, an energy to be measured in foot pounds by the resistance which it affords, but an irresistible norm that dominates all existence. This power is a norm analogous to natural law, and indeed, all natural laws are expressions of this norm. Yet this norm is not a law in a legal sense; it is neither a law made by a legislature nor ordained by a monarch; it is like a mathematical formula, a rule, or principle, or uniformity, which applies to anything and everything that exists, and which permeates the world of reality as what has been called the logic of facts.

This view offers a new God-conception, which is neither the old monotheism nor the old pantheism, yet preserves the truths of both views in what may be called "nomotheism," i. e., the conception of God as the norm of existence.

Here we have a God-conception in which the basic argument of atheism has become the head of the corner. This God is at one with science. He is spiritual in the philosophical, not the spiritualistic sense of the word spirit. He is as spiritual as, or rather more so than, thoughts are spiritual, for he is the prototype of thinking and the ultimate norm of correct thought. He is at the same time as real as the mathematical verities, i. e., the objective factors described in mathematical truths; for they are the conditions which determine the course of events and are the creators of the universe. This God is not an individual being, but the All-being; not a creature of supermundane size and importance, but truly God. Not a particular entity, but omnipresence itself, and eternality itself, and universality itself. Yet while he is not a particular individual, he is yet possessed of a definite character, not indeterminate but transcendently and most exceedingly determinate. Far from being existence in general and indefinite, he is the

He is not vague and nondescript but well-defined or definable conditions, a truths, a superpersonal personality are not corporeal limbs, but eternal manifests itself as the constitution of existof the universe, as the standard of right nature of man.

here to dwell on the details as to the principle of the world, nor to exsignificance; nor to point out its inrepresents itself in mathematics; be it and that when I recognised its found the real ground of all religious in it the key that will unlock the religion. We can now regard religion on institutions as a phenomenon of human naturally and necessarily passed through animism and fetishism, through the pethrough polytheism and monotheism, always representing the pernorm of existence until it is reduced to the world, in which the facts of our interpreted.

progress in the evolution of religion the fact is that as a rule something considered for the sake of something more of mythology for the sake of a more is a sacrifice of the human mind fit to judge; but the Greek Pagan loss of his poetical world-conception as a beauty of life, and of all that makes life surrender of our traditional about without a hard struggle on the part they understand the truth of their position, which is relatively true to be absolutely true can rise of a new and broader religious concep-

when they have gone through the valley of darkness, ... will be none the less purified in the refining furnace of ... ting and searching, and they will reach a higher and nobler stage of the conception of their religion. They will find that the facts of religious life have remained the same, while the interpretation only has changed. Many things which they formerly deemed essential will become incidental, yet their vision will be clearer and their outlook into the past as well as into the future more comprehensive.

Religious life is reflected in religious literature; and thus our attitude toward the Bible is characteristic of the breadth of comprehension we have attained. The deification of the Sacred Scriptures, their exaltation as Holy Writ, characterises the stage of dogmatism; and we must therefore expect that every one who is still under the ban of a literal belief in the dogma as absolute truth will naturally look upon the Bible as a literally inspired book, for the redaction of which God himself is ultimately responsible. Men of this type accept the Bible as absolute authority, because to them it is divine revelation pure and simple. They deem it wrong and irreligious to exercise criticism, and place the Bible above their own thinking as the norm of all truth.

According to the dogmatist, the Bible, being the word of God, contains the truth and nothing but the truth; from a purely secular standpoint the Bible may be regarded as the word of God in so far as its statements are found to contain scientific or moral truths. Taking this position, we claim truth and divinity to be interchangeable ideas, the former being a philosophical, the latter a religious, term for one and the same thing. The gems of truth in the Bible are not more divine from having been endorsed by the majority of the delegates assembled at Nice, in 325, and ten ecumenical councils could not by declarations of its infallibility as canonical writings cleanse it of its errors and shortcomings. On the other hand, the truth of other books, of Shakespeare and Goethe, of Kant and Darwin, of Euclid and Gauss (in so far as it has any bearing on man's moral conduct), is not less holy nor more profane than any truth recorded in the Bible.

The Bible as an entirety is not a consistent whole, but a collection of many books of different character and value and written from divergent standpoints. It cannot directly but only indirectly be called a revelation of God. It is, to use a now common French word, the *dossier* of the religious evolution of the people of Israel. It is a batch of records, a collection of documentary evidences gathered in an important phase of the religious development of the world when monotheism was for the first time firmly established and its advocates had just gotten a glimpse of the universality and cosmic significance of religion.

If the Bible be a collection of records, the truth of its various statements cannot be absolute but consists mainly in being a faithful mirror of their times. From this standpoint the religions which are based upon the Old and the New Testament cease to be pledged to the letter of the Bible, and its representatives gain for themselves the liberty of free inquiry.

These general remarks are of importance in the present question, because the principles involved have a direct bearing upon the problem of the Bible and divine revelation. A change in our conception of God will necessarily show the records of revelation in a new light.

From my standpoint it has become an impossibility to believe that God, the Most High, should bodily appear at Abraham's tent and deign to partake of a meal; and I find it difficult to find any divine significance in the words which the strangers utter, who are first three persons and then addressed as one and spoken of as "the Lord" (Gen. xviii. 2 and 3). With all due deference to Prof. W. Henry Green, for whose theology and other accomplishments as a religious leader I have an unbounded respect, I must fall back upon the theory that these and similar passages are instances of anthropomorphism, relics of Paganism which have escaped the censorship of the monotheistic redactor of the Old Testament. Notice, too, that (in Chapter xv. 18) God promises to give to Abraham and his seed the land from the Nile to the Euphrates, with all the inhabitants thereof, of which territory Palestine is only a small portion.

While the Lord is quite affable and convivial in Abraham's tent, there are other passages where the writer's anthropomorphism is less pleasant. We read, for instance, of Moses that he fled from Egypt and lived in Midan where he married Zipporah, the daughter of the priest of Midan, and she bore him a son called Gershen who had not been circumcised in the tents of the Midianites. When Moses returned to Egypt he took his family along, and the following curious incident happened to Moses on the way. We read in Exodus iv. 24–26:

"And it came to pass by the way in the inn, that the Lord met him [Moses] and sought to kill him. Then Zipporah took a sharp stone, and cut off the foreskin of her son, and cast it at his feet, and said, Surely a bloody husband art thou to me. So he [the Lord] let him [Moses] go: then she said, A bloody husband thou art, because of the circumcision."

Only think of the scene as real and depict the Lord as playing this undignified part, and who can say that he believes it? I for one give it up and prefer to regard the passage as a crude piece of anthropomorphism.[1]

Three millenniums ago the conviction prevailed that a God who by prayer or offerings could not be prevailed upon to give rain was a useless institution; to-day we no longer pray for a change of weather but rely on natural law and substitute methods of irrigation for the conjuration of special divine intercession. There may be professors of theology who still in theory hold the old view of God, but there is none who would act according to it in real life. I confess freely that I no longer believe in miracles. I do not deny that many miraculous things happen, but there are no miracles in the sense of a special divine intercession. If they

[1] If circumcision be indeed a divine institution which was personally advocated by the Lord (Genesis xvii. 11–12), and by his bodily appearance insisted on with threats of assault, why is it no longer practised to-day by Christianity? The Gentile church has dropped it for good reasons and we know now that it has been from time immemorial, and is still, practised by many savage tribes in the interior of Africa and America. That it was a distinction in Egypt for the priesthood may have influenced the Israelites to adopt the practice, but need not prevent us to-day from branding it as a barbarous rite which is at once indecent as it is bloody and brutal. I cannot help expressing the wish that our Jewish fellow citizens would abolish this useless mutilation or at least treat it as an unessential part of their religion.

ever happened, why do they no longer happen to-day? In the Old Testament God was a miracle-worker who took pride in showing off his power over the forces of nature. Either God has changed his character, or his prophets have changed their conception of God, for, at any rate, no faithful believer to-day would attempt to prove the existence of God after the manner of Elijah.

There was a question in the days of Elijah, as to whether Baal or Yahveh was God, and the prophet, who stood accused of having made himself offensive to Ahab the King, proposed to decide the problem as follows. He said to the King, 1 Kings xviii.:

"I have not troubled Israel; but thou, and thy father's house, in that ye have forsaken the commandments of the Lord, and thou hast followed Baalim.

"Now therefore send, and gather to me all Israel unto mount Carmel, and the prophets of Baal four hundred and fifty, and the prophets of the groves four hundred, which eat at Jezebel's table."

Having gathered the people together on Mount Carmel, Elijah proposes a prayer-test in miracle-working and comes out victor. We read:

"And it came to pass at the time of the offering of the evening sacrifice, that Elijah the prophet came near, and said, Lord God of Abraham, Isaac, and of Israel, let it be known this day that thou art God in Israel, and that I am thy servant, and that I have done all these things at thy word.

"Hear me, O Lord, hear me, that this people may know that thou art the Lord God, and that thou hast turned their heart back again.

"Then the fire of the Lord fell, and consumed the burnt sacrifice, and the wood, and the stones, and the dust, and licked up the water that was in the trench.

"And when all the people saw it, they fell on their faces: and they said, The Lord, he is the God; the Lord, he is the God."

If God be truly the same for ever more, why does he no longer have prophets who work miracles? But the truth is that God's handiwork appears in the order of nature and does not manifest itself in its exceptions. What would we say to a prophet to-day, a rabbi, or a bishop, or a protestant doctor of divinity, who would propose a public prayer-test and thus prove that Jehovah and not Allah or Brahma or Shang Ti is God. We would laugh at him; some would go out of sheer curiosity, but no one would take him seriously. If we were to read the story as having happened to-

day, and if otherwise creditable witnesses testified to its truth, we would not believe it, but deem it more proper to investigate into the mental condition of the witnesses. But since it is supposed to have happened almost three thousand years ago we are expected to accept it and believe the story and find no further difficulty.

But the internal improbability, not to say impossibility, of the story, which, whatever may be the historical kernel, marks it as a legend, is not all. The farce becomes a tragedy. The story continues:

"And Elijah said unto them, Take the prophets of Baal; let not one of them escape. And they took them: and Elijah brought them down to the brook Kishon, and slew them there."

We may assume that the four hundred and fifty priests of Baal were criminals who deserved death for crimes which the present report omits to mention. But such an assumption is not warranted by the context. They are put to death ostensibly on no other ground than being the priests of a false God. Any religion to-day that would propose to follow the example of Elijah will have to be suppressed by our government authorities. There are instances of Indian rain-makers, zealous for their religion and pure in their intentions, who having by some extraordinary coincidences proved successful, proceeded to have all rival medicine-men slain. And while we abhor their deeds as those of assassins, Elijah is called a prophet of God. All the traditional interpretations which will make us believe that in the days of Elijah extra severe measures were needed, are artificial. We might as well believe that the whole order of nature including the present contrast of right and wrong was different in the time of the Old Testament. But while we might grant, for controversy's sake, that people lived to an abnormally great age, one hundred and seventy-five years and even nine hundred years, we do not grant that what is wrong to-day was right of yore. On the same ground the horrors of the Inquisition and the burning of poor Servetus could be most easily justified.

Elisha, the disciple of Elijah, anoints Jehu, a captain of Ahab's guards and a zealous believer in Yahveh, as King over Israel and commands him in the name of the Lord "to smite the house of

[illegible] his master." And Jehu succeeds by treason and treachery [illegible] related in the Bible, not only without any rebuke, but [illegible] with praise and not without a certain satisfaction. Suppose [illegible] and his house had deserved death, was it right for the rebel [illegible] to have the children of his former master slain after they had [illegible]: and if the priests of Baal were villains, indeed, was [illegible] worthy of a worshipper of the true God to kill them by an act of [illegible]? We read in 2 Kings x. 18–28:

[illegible] Jehu gathered all the people together, and said unto them, Ahab served [illegible] little; but Jehu shall serve him much.

[illegible] therefore call unto me all the prophets of Baal, all his servants, and all [illegible] priests; let none be wanting: for I have a great sacrifice to do to Baal; whosoever shall be wanting, he shall not live. But Jehu did it in subtilty, to the intent that he might destroy the worshippers of Baal.

[illegible] Jehu said, Proclaim a solemn assembly for Baal. And they proclaimed it.

[illegible] Jehu sent through all Israel: and all the worshippers of Baal came, so that there was not a man left that came not. And they came into the house of Baal; and the house of Baal was full from one end to another.

[illegible] he said unto him that was over the vestry, Bring forth vestments for all the worshippers of Baal. And he brought them forth vestments.

[illegible] Jehu went, and Jehonadab the son of Rechab, into the house of Baal, and said unto the worshippers of Baal, Search, and look that there be here with you none of the servants of the Lord, but the worshippers of Baal only.

[illegible] when they went in to offer sacrifices and burnt offerings, Jehu appointed [illegible] without, and said, If any of the men whom I have brought into your hands escape, he that letteth him go, his life shall be for the life of him.

[illegible] it came to pass, as soon as he had made an end of offering the burnt [illegible] that Jehu said to the guard and to the captains, Go in, and slay them; let [illegible] forth. And they smote them with the edge of the sword; and the guard [illegible] the captains cast them out, and went to the city of the house of Baal.

[illegible] they brought forth the images out of the house of Baal, and burned [illegible]

[illegible] they brake down the image of Baal, and brake down the house of Baal, [illegible] it a draught house unto this day.

[illegible] Jehu destroyed Baal out of Israel."

The Night of Saint Bartholomew was not worse than this. [illegible] is blamed for keeping up the worship of the golden calves [illegible] which were set up for the ten tribes in competition with the temple worship at Jerusalem, but his atrocities and

his treachery receive the unqualified praise of the Lord. We read (v. 30):

"And the Lord said unto Jehu, Because thou hast done well in executing that which is right in mine eyes, and hast done unto the house of Ahab according to all that was in mine heart, thy children of the fourth generation shall sit on the throne of Israel."

If anything is clear to the student of the Bible it is this, that our views of God, though they have developed under the influence of Biblical theology and though we grant them to have directly descended from the Israelitic God-conception, have been considerably purified during these latter centuries through scientific training and by philosophical considerations.

David is a man of God in the national consciousness of the Jews, but not if he is measured by the standard of morality to-day. He is not only not a man of God but acts sometimes like a villain, and the redeeming features of his character consist in the circumstance which is no merit of his that his contemporaries were not a whit better, but most of them worse and less energetic, than he was. His crimes and various offences are bluntly stated in the Bible because the authors of that age did not see great wrong in his deeds and looked upon his lecherous and treacherous ways as excusable foibles. The story of Bathsheba is the best known but not the worst act of his life, and it has the redeeming feature in being branded as wrong by Nathan the prophet. The last deeds of his life are as infamous as any perjury in profane history and are mentioned without a word of censure.[1] David ordered his faithful servant Joab to be slain for crimes which David ought to have punished at once by a regular court martial, when they were committed, and not many years afterwards by the irregular proceeding of having him assassinated. In addition he had promised to spare the life of Shimei, one of his political enemies, but now on his death-bed David enjoins his assassination on his son and

[1] We read in 1 Kings xv. 5: "David did that which was right in the eyes of the Lord, and turned not aside from any thing that he commanded him all the days of his life, save only in the matter of Uriah the Hittite."

successor, Solomon, saying, "his hoar head bring thou down with blood." These were David's last words recorded in the Bible.

The indecency of Biblical speech is not a calling of things by their right names, at least not in the great majority of cases; it is simply characteristic of the vulgarity of a pristine age. As such it is quite excusable if the Bible is of human origin, but not if it is the word of God.

If we take for granted that the Bible is absolutely true, we are still confronted with its undignified conception of God; for the God of Elijah and the God of David are no longer our God; and the way in which they ascertain the will of God is based upon the superstitions of bygone ages. One more instance will be sufficient. We read in 2 Samuel xxi.:

> Then there was a famine in the days of David three years, year after year; and David enquired of the Lord. And the Lord answered, It is for Saul, and for his bloody house, because he slew the Gibeonites.
>
> Wherefore David said unto the Gibeonites, What shall I do for you? and wherewith shall I make the atonement, that ye may bless the inheritance of the Lord?
>
> And they answered the king, The man that consumed us, and that devised against us that we should be destroyed from remaining in any of the coasts of Israel,
>
> Let seven men of his sons be delivered unto us, and we will hang them up unto the Lord in Gibeah of Saul, whom the Lord did choose. And the king said I will give them."

This is David's dispensation of justice which according to the Biblical record is done in response to an inquiry of the Lord. Can we really assume that this answer, which led David to commit a most atrocious iniquity, actually came from God? The probability is that this inquiry was made through the Urim and Thummin, and that it was on a plane with casting the lot,—both of which, with all due reverence for the belief of ancient theology that is still holding its own in our midst, we must reject as superstitious practices. Let any one who would dare to defend the theory that such was in those days God's method of making special revelations, declare frankly whether he would countenance the outcome of it in the present case, which ended in the brutal lynching of seven men

of the house of Saul, through a weakness or a superstitious foible of David. We read 2 Samuel xxi, 9:

"And he delivered them into the hands of the Gibeonites, and they hanged them in the hill before the Lord: and they fell all seven together, and were put to death in the days of harvest, in the first days, in the beginning of barley harvest."

The only explanation from the old standpoint of uncritical belief is the thought that the ways of God are inexplicable. What would we think of a king who to-day would act like David, and what of a religion whose oracles would lead to such deeds!

The instances of Elijah and David are not isolated exceptions, but typical cases of the average morality that prevails among the great men of the Old Testament. The general tenor of their religious convictions is the ordinary golden mean and does not yet touch the low watermark of human sacrifices as in Jephtha and Hiel, the second founder and rebuilder of Jericho, or the justification of fraud toward strangers.

When Jericho was destroyed at the special command of God, all its inhabitants were slain, "both man and woman, young and old, and ox and sheep and ass," with the sole exception of Rahab, a disreputable woman who had betrayed the city into the hands of the enemies of her countrymen. And Joshua adjured the people, saying (Joshua vi. 26):

"Cursed be the man before the Lord, that riseth up and buildeth this city Jericho: he shall lay the foundation thereof in his first born and in his youngest son shall he set up the gates of it."

Jericho, however, was sure to be rebuilt sooner or later, for, being the key to Palestine, and commanding the entrance into the country from the desert routes, it was too important both for commercial and strategic purposes to be left in ruins; and the man who undertook the work was still superstitious and savage enough to mind Joshua's curse: we read in the first Book of Kings, with reference to the reign of Ahab (Chap. xvi. 34):

"In his days, Hiel the Bethelite built Jericho; he laid the foundation stones thereof in Abiram, his first born, and set up the gates thereof in his youngest son, Segub, according to the word of the Lord which he spake by Joshua, the son of Nun."

The Bible does not condemn Hiel the Bethelite for his superstition; it simply tells the facts and makes the dry statement that this awful deed was done "according to the word of the Lord, which he spoke to Joshua, the son of Nun." Is that indeed the word of God which can be used to give support to the most barbarous relics of the age of savage life? If God really made his will known by direct intercession, why did he not give Jephtha a warning that he did not want human sacrifices, and why did he not send a prophet to the brave hero to release him from the rash vow that pledged him to offer up his own daughter for a burnt-offering?[1]

The Bible contains most noble sentiments, but on the other hand it is not free from superstitious notions of folklore interest. Let us therefore bear in mind that it is not a direct utterance of the word of God, but a record of the history of religion. The terrible witch prosecutions of the Middle Ages have their root in such passages of the Old Testament as these, "Thou shalt not suffer a witch to live." (Ex. xxii. 18.)[2] If the Bible was really written under the special dispensation of God, why were expressions like these used, which, as God in his omniscience ought to have foreseen, would cost many, many thousands of innocent lives?

We want a God who is straightforward and loves clean hearts and clean hands, not one who connives at surreptitious tricks and vile practices for the sake of petty gains, and must give his special commands in whispers. We read in Ex. xi. 2 and xii. 36:

"And the Lord said unto Moses . . .

"Speak now in the ears of the people, and let every man borrow of his neighbor, and every woman of her neighbor, jewels of silver and jewels of gold.

"And the Lord gave the people favour in the sight of the Egyptians, so that they lent unto them such things as they required. And they spoiled the Egyptians."

The traditional explanation of this passage is that the Egyptians had used the Israelites as slaves, and that a special provision had become necessary to make them receive payment for their

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[1] The story is told in Judges xi. 30–40.

[2] Similar passages are Lev. xx. 6; Lev. xx. 27, and others.

labor, which was done in this way. The same logic would justify any theft or fraud, and is it worthy of God to balance the debit and credit of his people by meeting suppression with fraud? It is natural that suppression should be met by fraud, and it is further a psychological fact that the suppressed will try to excuse their practices on religious grounds as being entitled to a reparation of some kind and acting on the special permission or even command of God. But for that reason we do not believe—even though the statement was made by the Bible that God advised the Israelites to spoil the Egyptians. No! That is not the God of mankind to-day. The Omnipotent would have had an open reckoning, and would have scorned to balance the wrongs of his people by stealth.

The statement just quoted in Exodus is a record of the God-conception of a down-trodden nation but does not record a word of God himself. If we have to accept the old view as the only conception of the Bible that is tenable, we had better abandon religion and turn infidels; for the Bible, being a collection of religious records, contains barbarisms and aberrations which we hope to have outgrown for good. This is true of the Old Testament as well as of the New Testament. Both contain wheat and tares, both have grown and brought forth fruit, both have been tried and the tares have been gradually discarded. Let us openly confess that Christianity to-day is no longer the Christianity of the Apostolic age with its superstitious fear of the day of judgment and the eager hope of healing diseases by faith. The Christian Church no longer attempts to cast out devils or to lay hands on the sick for the purpose of curing them. The words which Jesus is reported to have spoken before "he was received up into heaven" are only partly remembered—so far as they still agree with present Christianity—and partly forgotten. We read in Mark xvi. 15–18:

"And he said unto them, Go ye into all the world, and preach the gospel to every creature.

"He that believeth and is baptized shall be saved; but he that believeth not shall be damned.

"And these signs shall follow them that believe; In my name shall they cast out devils; they shall speak with new tongues.

"They shall take up serpents; and if they drink any deadly thing, it shall not hurt them; they shall lay hands on the sick, and they shall recover."

If this be Christianity, then the present Christianity is bare of the signs and it is a spurious Christianity.

St. Paul confidently expected that he himself would see the day of the Lord, and having explained in his first epistle to the Corinthians the significance of the events in Jewish history and the punishment of sinners, he adds:

"Now all these things happened unto them for ensamples: and they are written for our admonition upon whom the ends of the world are come." (1 Cor. x. 2.)

When some of the Thessalonian Christians died, he comforted the survivors by declaring that those who sleep will be resurrected and taken together up to heaven with those who survive. And the words of Paul expressly imply that he himself, together with the Thessalonians whom he addresses, will remain, of which fact he is so sure as to pronounce his opinion as being an utterance of "the word of the Lord." He says (1 Thes. iv. 13–18):

"But I would not have you to be ignorant, brethren, concerning them which are asleep, that ye sorrow not, even as others which have no hope.

"For if we believe that Jesus died and rose again, even so them also which sleep in Jesus will God bring with him.

"For this we say unto you by the word of the Lord, that we which are alive and remain unto the coming of the Lord shall not prevent them which are asleep.

"For the Lord himself shall descend from heaven with a shout, with the voice of the archangel, and with the trump of God: and the dead in Christ shall rise first.

"Then we which are alive and remain shall be caught up together with them in the clouds to meet the Lord in the air: and so shall we ever be with the Lord.

"Wherefore comfort one another with these words."

Shall we resort here to the interpretation that St. Paul means by "us, upon whom the ends of the world are come" the uncounted thousands of generations from his time to doomsday? If he did mean it, he certainly used words which could not but be misunderstood by the people whom he addressed. The context speaks plainly against it and St. Paul evidently repeats the words "we which are alive and remain" to give emphasis to this hope which he proclaims unto his followers "by the word of the Lord." There

is only one way of explaining these passages without doing violence to the sense of the words, which is that St. Paul has misunderstood the Lord when he communicated to him the secret concerning the end of the world.

The best way out of the difficulty is a frank confession that St. Paul was mistaken, and that he was in the habit of proclaiming those deep convictions of his which he could not prove by reasoning, as words of the Lord. His epistles are documents of great importance, giving evidence of the development of Christianity during the Apostolic age in its spread over the Gentile world, but we cannot regard them as a direct revelation of God which we could quote as authority on mooted subjects.

With all due reverence to St. Paul as a saint and an apostle, we must insist that he is as much subject to error as are we to-day, and it was a symptom of the inroads of Paganism into Christianity when Church councils declared his epistles or any other books to be the infallible word of God.

The Gospel writers are no exception to the rule and even the sayings of Christ should not be blindly accepted as utterances of truth. One instance that refers to the same subject of the coming of the Son of Man, will be sufficient. We read in Mark ix. 1:

"And he (Jesus) said unto them: 'Verily I say unto you that there be some of them that stand here which shall not taste of death till they have seen the kingdom of God come with power.'"

That in this passage the second advent of Christ is referred to there can be no doubt, and, certainly, readers in the early days of Christianity understood such prophecies in this sense. A parallel passage in Matthew which is more explicit may be worth quoting in full:

"For as the lightning cometh out of the east, and shineth even unto the west; so shall also the coming of the Son of man be.

"For wheresoever the carcase is, there will the eagles be gathered together.

"Immediately after the tribulation of those days shall the sun be darkened, and the moon shall not give her light, and the stars shall fall from heaven, and the powers of the heavens shall be shaken:

"And then shall appear the sign of the Son of man in heaven: and then shall

all the tribes of the earth mourn, and they shall see the Son of man coming in the clouds of heaven with power and great glory.

"And he shall send his angels with a great sound of a trumpet, and they shall gather together his elect from the four winds, from one end of heaven to the other.

"Now learn a parable of the fig tree; When his branch is yet tender, and putteth forth leaves, ye know that summer is nigh:

"So likewise ye, when ye shall see all these things, know that it is near, even at the doors.

"Verily I say unto you, This generation shall not pass, till all these things be fulfilled." (Matt. xxiv. 27–34.)

The common interpretation of this passage is that Jesus mixes up two events, the destruction of Jerusalem and the day of judgment; but the words "immediately after the tribulation of those days" cannot be disputed away; and further the statement is unequivocal, and affirmed by a strong asseveration "verily, I say unto you, this generation shall not pass till *all* these things be fulfilled." But if we accept the theory that Christ confused two different events in referring to a subject that was of an awful and personal significance to the people whom he addressed, how can we place any reliance on other words of his?

There is in my opinion no way out of it but by abandoning the old Pagan worship of the letter of the Scriptures as Holy Writ. The Bible is the word of God in the same sense as all scriptures that contain truth are the word of God. The Bible is more important than other books because it covers a period of the religious evolution of mankind which is of paramount importance, but for that reason, the Bible is neither free from error nor in any sense an absolute authority in matters of truth. I have arrived at this conclusion after long and careful deliberation, and if I should be mistaken I shall gladly go over the whole field again to correct my errors. I am willing to retrace my steps or alter my views if truth can be proved to be against me.

As to Bible criticism I wish to state that far from being unholy it is a product of piety and religious conscience. The work is not carried on by infidels or antagonists of the Christian faith, but by deeply religious and conscientious men who are moved by a love of truth, and thus can be rightly said to be guided by the Holy

Spirit. Professor Cornill, for instance, is not a negative spirit, but a fervid Christian believer. He is a Huguenot (i. e., a Presbyterian) whose ancestors fled from France on account of their faith and found an asylum among the German Lutherans. How strong his adhesion to the faith of Calvin is, appears from a statement he made in 1896 before the fourth West Prussian Provincial Synod[1]:

"As a genuine old Huguenot, in my whole church feeling and consciousness I belong to the strict Reformed Confession. If there were in this synod a group of the Reformed Church, I should have felt constrained to ally myself with it, and should have done so as flesh of my flesh and bone of my bone."

In conclusion I sum up: The Bible if treated as a secular book on the same level with other books is great and divine; but the moment it is literally or in any special sense proclaimed as the word of God, it becomes an idol full of ugliness and abomination.

God is not like the Pagan gods of ancient mythologies; he speaks to us in a spiritual way by the experiences we make in life and in the truths which we learn. We can fairly abandon the Pagan conception of God for the nobler and more philosophical view that God is spirit and love and light.

But let us be serious about our God-conception; let us cease to halt between two opinions, and if we surrender Baal, let us surrender all that savors of Baal service, though it may go under the name of Yahveh or Elohim or Christ. Let us be children of the light, and children of the day; not children of the night nor of the darkness.

God is not the darkness of the world, but the eternal light: He is the light which lighteth every man that cometh into the world. And the light of God comes to us in the regular order of evolution, finding its highest intellectual expression in a scientific world-conception and its moral actualisation in the religion of love and good-will.

We had a moral reform of Church-life in the Reformation; what we need now most urgently is an intellectual reform, a re-

[1] The speech "Science in Theology" was published in full in *The Open Court*. Vol. XI., pp. 35–42. As to the occasion which elicited it and for further details see *ibid.* the footnote on page 35.

form that will restore sincerity of heart and honesty in matters of thought. I do not advocate the undoing of the work of the past or the belittling and tearing down of its results; on the contrary, I propose to complete the work, to be serious in questions of fundamental importance, to investigate the philosophical foundation and the historical superstructure, with the severest methods of critique, and to replace the old rotten beams by solid masonry quarried from the realities of life and joined so firmly as to bear the strain of doubt and the stress of research. I do not want laxity in matters of faith, but greater rigor and more earnestness; not indifference toward mooted problems, no agnostic shrug of the shoulder, but a higher assurance; not a surrender of the hope of religious certainty, but the gaining of a firmer ground; not the abolition of the ideals of the old orthodoxy, but the establishment of a new orthodoxy, a religion of scientifically tenable truth, a new Christianity, with a new God and one whose Christ is truly the Way, the Truth, and the Life.

Is the aim still too distant? There are some who do not as yet feel the need of an intellectual reform. They do not understand the present age and complain about the irreligious spirit of scientists and philosophers. But there are others who have been confronted with the problem; and they are the men who are able to judge whether or not our solution is right.

We need a more scientific conception of the Bible. Luther used to say, "The worst idols in the country are the pulpit and the sacrament"; he might have added a third, "the Bible." If we read the Bible with discretion, it will be found to be a source of blessings and to contain rich mines of wisdom, but an uncritical use of it, one which renders our judgment captive to the letter, will tend to enslave our mind and hinder the free unfoldment of our soul.

The present article is written to prove that we cannot regard the Bible as the word of God. But I wish our readers to remember that there is a reverse to the medal, which would be an exposition of the helpfulness of the Bible's religious ideals which do not lose their power by being coupled with human weaknesses and

shortcomings. It would lead us too far to enter upon the subject now, but those who have studied Professor Cornill's *Prophets of Israel* and the *History of the People of Israel* will not misinterpret the purpose of the present article.

The history of the world imposes new duties on every new generation. The truth is standing at the door and is knocking; shall we be afraid to let her in? The truth will change many things, but nothing that is of vital importance and if we have mistaken some incidentals for the essential thing, let us be corrected by the truth.

Science has taught us better methods of finding the truth than our ancestors possessed. Shall we shrink from using them in the religious field, where our convictions are more important, more significant, and of more practical and more sweeping application than in the domain of physics, chemistry, and electricity?

Let us hold fast to the idea that the truth is divine and we shall understand that science is a religious revelation. Science is the voice with which God speaks to mankind to-day, preparing a new dispensation which will sift tradition, keeping the good, discarding the bad, and, all in all, be in every respect superior to the dogmatism of the Middle Ages whose time is at last passing away.

EDITOR.

PSYCHOLOGY AND THE EGO.

THE first decisive step in the analysis of the complex web of phenomena is the polarisation of the data of experience into their objective and subjective aspects. The early stages of this process, or rather the preparatory steps which lead up to it, are probably subconscious, and accompany the differentiation of the sensory data, with their concomitant sense of outness, from the pleasures and pains, the consciousness of activity and central control, which are suffused with a pervading feeling of inness. Thus external things and events come to be marked off more and more clearly from internal feelings, passions, and voluntary efforts. The polarisation of experience, thus initiated, proceeds apace, until, in the subtle analysis of thought, the objective is clearly distinguished from the subjective, and the ego is differentiated from the non-ego. And the consequences, for subsequent thought, of these initial steps are momentous. At first the correlative reality and validity of the two aspects thus distinguished are taken for granted with naïve and unquestioning confidence. Then the two aspects are endowed with independence, and a distinction, founded on practical experience, affords the basis for a metaphysical theory, transcending experience, postulating the separate and independent existence of mind and matter. This, whether recognised as such or not, is a metaphysical theory, since it deals not with any observed or observable sequences of phenomena, in terms of scientific causation, but with the question of origin in terms of epistemology. The interaction of mind and matter is held to be the *fons et origo* of human experience,—the *raison d'être* of all the manifold complexity

of phenomena. For while science devotes its attention to the mode of sequence, metaphysics endeavors to explain the manner of origin.

But this metaphysical theory involves a balance of reality which is seemingly hard to preserve. The basal and ineradicable reality of experience is securely centered in experience itself, prior to any analysis; and it would at once be recognised as absurd to postulate superior reality for either of the two aspects which are distinguished in analysis, were not such an assumption supported by the metaphysical belief in the independence of matter and mind. For those, however, who have been led to accept this independence, the question ere long arises, whether it be not possible to simplify the problem; whether this perplexing dualism cannot be got rid of by showing that the one is somehow the product of the other; whether a unitary conception of the universe cannot be reached by assuming either that mind has been in some way evolved from matter, or that matter is merely a convenient fiction of the mind.

Which of these two courses is taken depends on a certain lopsidedness of tendency and training. The plain man of the world troubles his head little about any such abstruse and unpractical questions. To a week-day dualism of affairs he perhaps adds a Sunday-dualism of a somewhat different complexion. It is the man of science and the specialist for whom these questions loom up beyond the particular problems which occupy most of his attention. And the answers he formulates incline this way or that in accordance with the bias of his special training.

Let us suppose that he is a physicist. Then, as such, all his thoughts move in an ideal and abstract world of matter and motion. He seeks to interpret the universe from a very important but also a highly specialised point of view. He deals, not with the world of phenomena as they are presented, outside his laboratory, in the richness of undissected experience, but with an abstract scheme, elaborated for special ends; with a skeleton universe articulated with consummate skill; with the ideal construction of a scientific specialist, invaluable in itself and nowise contradicting experience,

but by no means co-extensive with that experience. Living his life of thought in this abstract world, the physicist, as such, not unnaturally comes to regard the matter and motion, which play the leading rôles on the stage of his ideal scheme, as possessed of paramount reality.

Or let us suppose that he is a naturalist devoting his energies to the study of geology and biology. He too frames an ideal scheme. The world, as reconstructed in his thought, is indeed less abstract than that of the physicist; but many of the elements which enter into the field of practical experience are necessarily excluded, since they have no direct bearing on his special studies. The æsthetic nuances of art, the moral values of history, these are by no means denied; but they do not enter into his scheme of thought as a specialist in scientific interpretation. He too not unnaturally magnifies his office. The objective world affords the realities among which his thought moves onward day by day to fresh conclusions, and for him they become paramount. He joins hands with the physicist whose interpretations, though on a more abstract plane, he recognises as consonant with his own. His metaphysics takes its color and tone from the environment of his scientific conclusions; the objective world, he affirms, was in existence long ages before even the germs of thought were evolved, consciousness, the late comer, being merely the mirror in which objective events are more or less faithfully reflected.

Or let us suppose, again, that he is a psychologist. His thought is daily occupied with sensations and perceptions leading up to cognition more or less suffused with emotional tone. The consciousness which he daily endeavors to interpret is and must be for him, as psychologist, the basal and final reality. The objective world,—what is it but a projected and externalised product of consciousness? Of what threads are the warp and woof of phenomena woven, save from more or less sublimated sensory data, and from the relationships we perceive among them? The one existence, the reality of which you cannot for one moment doubt, is that of the mind within which the universe takes shape and rational coherency. The real existence of matter and motion may be doubted,

and indeed has again and again been doubted; but to question the reality of consciousness, of the mind which alone can affirm or doubt, can accept or question, is nothing less than intellectual suicide. On this fundamental verity we are forced, he contends, in the last resort to take our stand. Whatever else may be doubtful, the existence of the mind, without which you cannot even doubt, is certain. Thus the idealist, pushing the concepts begotten of his special line of thought to their utmost limit, contends that the objective world is at best developed in our minds from such stuff as dreams are made of.

Once more let us suppose that he is an historian, vividly impressed with the ethical significance of the noble or petty deeds which it is his business to record and endeavor to assess at their true value. The controversies between materialists and idealists are for him but as the distant din of factory wheels or the clatter of horse-hoofs and vehicles on the ill-laid pavement. Manufacture and traffic on the one hand, metaphysical abstrusities on the other, are but the disturbing accessories in a world the real value of which is to be found in the interplay of human wills and the teleological development of human purpose. The teachings of history proclaim, he asserts, that, when life is stripped of its superficiality and vulgarity, the one outstanding reality is character. And when the drama of this fleeting life shall be reviewed in its true significance, merely material things and events will be seen to be but stage properties,—simply tools placed for awhile in the hands of responsible beings. Not in them is the true reality centred, but in will, in purpose, in character.

Now each is right within the limits of his ideal construction; each is wrong when he attempts to force his conclusions in regions within which they lose their validity. The physicist is right within the abstract scheme of a highly specialised system of matter and motion; the naturalist and psychologist are right, each within his proper sphere; the ethical historian is right within the realm of human purpose and endeavor. But all alike are liable to fall into the grave error of supposing that an ideal construction, of the utmost value for the purposes of specific interpretation, affords an

adequate solution of multifarious problems of the world at large. It is the business of the philosophic judge, not to espouse the cause of this or that claimant to a reality which transcends all other, but rather to harmonise the claims in the interests of philosophic justice. The ideal construction of philosophy should combine and unify the divergent results begotten of abstract analysis, and should aim at a consistent and comprehensive synthesis in which the familiar occurrences of daily life, the conclusions of science, physical, natural, and psychological, the teachings of art and of history, the aspirations of religious enthusiasm, should each in due degree contribute appropriate material.

And as steps to this desired end we must recognise both the full value of the results reached in each department of knowledge, and the limitations inevitable in a partial survey of a portion of the wide field of experience,—a survey conducted from a special point of view and for a particular and specific purpose. We must not indeed attempt to make our psychology a merely material system, nor endeavor to interpret the laws of physics in terms of sensation and perception. Nothing but confusion results from importing into one ideal construction the concepts belonging to another. It is not by any such superposition of one scheme of thought on a different scheme that an harmonious blending of results can be reached. It is rather by piecing the puzzle together and making the limiting boundaries fit that we must aim at constructing some sort of schematic map or philosophical picture of the universe.

Bearing these conclusions in mind, let us now turn to a consideration of some of the teachings of psychology.

If, as we have had occasion to see, it be necessary in physical interpretation to distinguish carefully between the laws of antecedence and sequence formulated by science, and metaphysical postulates concerning the originating cause, still more essential is it to draw an analogous distinction in the study of psychology. For in mental science there is even a stronger tendency than in physical science to confuse the issues of different lines of thought. This should as far as possible be avoided alike in the interests of science and of metaphysics. For science can never be sure of its ground

till every metaphysical assumption be either banished or made to stand openly confessed as such.

Starting then, in our brief consideration of psychology, from the basis of experience, attention may first be drawn to the fact that much stress is often laid on its wholly individual nature. With no experience has any man first-hand and direct acquaintance save his own. Of no other experience than his own can he have anything but hearsay, inferential, or circumstantial evidence. This is sometimes spoken of as the fundamental isolation of the individual mind. The fact is beyond question. But in the practical relations of every-day life it gives rise to little difficulty. The indirect and circumstantial evidence we have, carries with it the assured conviction that our neighbors of normal sensory endowment has visual, tactual, and auditory experience in all essential respects similar to our own. Your objective world and mine are to all intents and purposes the same; and we can interpret it, by abstraction, in terms of the same ideal constructions. It is only when emotions and motives are concerned that we are sometimes forced to realise the absence of any direct evidence of what is passing in our companion's mind, nay even in that of our most intimate friend. Then we feel that it is only by the indirect method of putting ourselves in his place that we can infer what his feelings and motives may be. Hence when analysis distinguishes the objective and subjective aspects of experience, the fundamental isolation, above spoken of, clings more tenaciously to the latter, where alone serious difficulties have arisen. The objective world, we say, is common to you and to me. It is only in our inner subjective experience that the fundamental isolation holds good. But while this is true enough for practical purposes, it will not stand the test of criticism. The fundamental isolation holds good, if it hold good at all, of experience in its totality. It may indeed be more fully realised in daily life from one point of view than from the other. But, critically examined, it is obviously absurd to suppose that while the subjective aspect of experience is all my own, the objective aspect can be shared by any one else, closely as it may be found to accord with that of another person.

If this be so, then—apart from any superimposed metaphysical theory—psychology, the science which deals with experience from the predominantly subjective point of view, stands on precisely the same footing as the physical and natural sciences which deal primarily with the objective aspect of the same experience. And yet we find so careful and gifted a thinker as Prof. Hugo Münsterberg contending, or seeming to contend, that the universality and quasi-independence of physical phenomena, must be contrasted with the individuality and quasi-isolation of consciousness. The objective world is common to us all, and the ideal constructions of physics are of universal validity. But when regarded from the subjective aspect, experience is mine or yours or another's —nay, even if all inferential conclusions be excluded, mine alone. For of yours or any one else's I can only have hearsay or circumstantial evidence. By parity of reasoning, however, the objective world is, if inference be placed out of court and circumstantial evidence eliminated, mine alone. What direct knowledge have I of how the world presents itself to my neighbor? The fact is that the most insidious form of metaphysics is the crude metaphysics of common sense. Not content with the practical reality of the objective aspect, abundantly vouched for by daily experience, the metaphysics of common sense must needs assume the independent existence of the world we all externalise, although this independence is nowise attested by, and indeed transcends, experience. Thus only can we account for the strange belief that in one aspect of our experience there is more of isolation than in the other; and that psychology suffers from an inevitable defect of which there is no trace in physics and natural history. It is a metaphysical legacy to which we are unconscious heirs.

Having now freed the subject-matter of psychology from this incubus, or at least placed it upon the same logical footing as that of chemistry or biology, there seems no reason why we should not accept inferential conclusions concerning our neighbor's experience as freely and with as much confidence in psychology as in physics. We may here safely follow the lead of common sense, which is generally a trustworthy guide in matters with which it has adequate

practical acquaintance. Our course is thus free to adopt the normal procedure of science and to endeavor to formulate an ideal construction of general and not merely individual validity. Introspection must indeed largely take the place occupied by observation in the natural sciences, being in truth but a particular kind of observation; but just as in them we check each other's observations and compare notes as to the results, so in psychology we check, in every possible way, each other's introspections, and thus to some extent eliminate the effects of individual idiosyncrasy. Nay more, in so far as our conclusions are of scientific value, we do this completely; for science involves generalisation, and we cannot base valid inductions on the merely individual case.

The next point to notice is that we must not ignore, when we turn to the subjective aspect of experience, all the conclusions which have been reached, with much skill and pains, by those whose special business it is to deal with the objective aspect. That in large degree is the fallacy of the idealist, at any rate when he sublimates the universe into solipsism,—the doctrine that the sum total of existence is my own states of consciousness, all else, you my friend included, being merely the phantasmagoria of my waking dream. Logical as this is from a narrow and partial standpoint, it is inadmissible on the canons of a wider and more comprehensive logic. It may serve its purpose as a psychological fancy, having the self-consistent coherence of a poem or a work of art, but it obviously cannot be made to square with any other ideal construction. In any case psychology as a science has advanced on very different assumptions; it accepts the objective world as a valid construction founded on the teachings of experience, and endeavors to correlate objective conclusions with those reached in its own proper sphere of inquiry. It works hand in hand with physics, biology, and physiology, cheerfully admitting that the aspect of experience with which they deal has a reality coördinate with that of the subjective aspect which constitutes its special province.

Remember that we are here and now dealing with the teachings of experience quite apart from any theory of the manner of origin. Our object for the present is to exclude all metaphysical

implications. The externality of physical phenomena, however we may account for it, is given as such in experience; the sequence of events in time is based on an equally secure foundation. Space and time are abstract conceptions derived from the very conditions of our experience. And no science, physical, natural, or psychological, can advance a step towards an adequate interpretation of the phenomena with which they deal, if the conditions under which they enter into the scheme of experience are ignored. Psychology as a science, then, in endeavoring to interpret the subjective aspect of experience, must freely accept all that its sister sciences can teach with regard to the correlative objective aspect.

And as in other branches of science, so too in psychology, we must proceed by the methods of analysis, happy indeed if we escape the analyst's fallacy, and steadily refuse to endow with separate and independent existence the elements which for convenience, and the purposes of study, we distinguish in our thought. In such an analysis we soon recognise certain elements in our states of consciousness, which we term *presentative*, and distinguish from certain other elements which we term *re-presentative*. In common parlance we say that through the former we experience things and events, while through the latter we remember or recall occurrences which happened in the past. In this form the analysis is crude. Elementary text-books of psychology sometimes put the matter thus: presentative elements in consciousness are due to the direct and immediate stimulation of the terminal fibres or the end-organs of sensory nerves, by which certain sensory centres in the brain are called into activity; representative elements, on the other hand, are due to the revival of activity in certain centres by means other than the direct stimulation of the appropriate sensory fibres.

Accepting this distinction as valid for the sensory elements in consciousness, we must pause for a moment to consider how far the above form, in which it is often stated by psychologists, is satisfactory from the point of view we have here adopted. From this point of view it is obviously open to serious criticism. For if the objective and subjective aspects result from the polarisation of our experience, it cannot be satisfactory to say that certain elements

in the one are due to, or are caused by, certain occurrences in the other. This mode of expression is, indeed, another legacy of the crude metaphysics of common sense, according to which the objective world has separate and independent existence. The more satisfactory mode of expression is that the presentative elements in subjective experience are *directly correlated* with certain observed or inferred sequences in objective experience. In fact the whole interpretation of psychological phenomena is one of correlation; and a stage in the interpretation is reached when the conception of causation, as understood by science, becomes inapplicable.

The twittering song of a swallow falls on my ears as I write, and these presentative elements at once suggest representative elements, as I picture him perched on the corner of the house-roof near the nest beneath the eaves. For though he is invisible from where I now sit, I have again and again seen him perching there, so that this sound under these circumstances has become associated with the sight of him in that position. Now the ideal constructions of physics and physiology enable me to trace a sequence of objective events terminating, as I am taught, in molecular changes within certain areas of the brain-cortex. But there, so far as the matter in hand is concerned, the sequence ends. It is true that I believe that presentative states of consciousness are the concomitants of these cortical thrills, and that I am thus able to correlate objective molecular changes with subjective states of consciousness. But I cannot say that the objective changes *cause* the subjective states; first because we have no ground for supposing that there is any true antecedence; and secondly because, even if there be such antecedence, objective transformations of energy are, in mathematical phraseology, incommensurable with subjective states of consciousness. Even granting that there is a strict quantitative equivalence—so much brain-energy there, so much consciousness here—this equivalence does not seem to be comparable with that familiar in physical science. There is no transformation of brain-energy into consciousness. Nay rather the transformations of energy, in due quantitative proportions, proceed, as we believe, quite independently of any consciousness. Hence consciousness is

sometimes spoken of as an epi-phenomenon. In any case we stand on safer ground when we describe psychical states as the concomitants, not the products, of physical states, and speak of the correlation of the objective and subjective aspects of experience, not the causation of one by the other. Presentative states of consciousness are thus directly correlated with certain given modes of objective experience.

It is unnecessary here to trace the steps by which this correla tion has been established. It now forms part of the ideal construction of psychophysics. But a few more words may be added with regard to the doctrine of equivalence.

In the ideal construction of physical science any event is described in terms of the antecedent conditions of the system within which it occurs, and is explained by referring it to the general laws which summarise apparently invariable modes of observed sequence. The doctrine of quantitative equivalence, as applicable throughout all these sequences, has now become the corner-stone of the ideal construction of physics, and has been accepted by the natural-history sciences in all its entirety. The whole sweep and span of evolution extending through long ages, and the sequence of molecular changes on which the continuance of the individual life of an organism seems to depend, are alike held to be quantitatively enchained with an accuracy beyond our most subtle powers of measurement. Psychophysics has long sought to establish an equivalence of correlation between objective stimulus and subjective sensation. According to the Weber-Fechner formula the stimulus must increase in geometrical progression in order that the sensation shall increase in the evenly-graded scale of an arithmetical progression. The following series of figures will illustrate the relation of the one mode of progression to the other in the simplest possible manner.

Geometrical.	1.	2.	4.	8.	16.	32.	64.	128.	etc.
Arithmetical.	1.	2.	3.	4.	5.	6.	7.	8.	etc.

To such progressions are stimulus and sensation said to conform, proportional increments in the former giving successively equal increments in the latter. The law however seems only to hold

good in the optimum mid-region of sensation. Near the threshold it gives false or conflicting results,[1] as indeed might be expected since any logarithmic curve expressing a geometrical progression is asymptotic. We must probably regard the Weber-Fechner formula as only an approximation towards a satisfactory correlation, in qualitative terms, of external stimulus and subjective sensation. It can only at present be applied with even an approach to accuracy in a limited part of the field of sensation. Nor do we know for certain whether the formula, tentatively expressing the relation between stimulus and sensation, expresses also the relation between physical excitation and physiological response. Is the Weber-Fechner formula primarily physiological and only psychological in so far as consciousness is correlated with cortical disturbances in the brain? Presumably it is a physiological formula which expresses a particular mode of the transformation of energy accompanied by a sort of organic friction. Even on this hypothesis we do not know what is the precise seat of the organic friction—whether in the end-organ, in the nerve-tract, or in the cortical centres. But if the formula with which we are dealing is primarily a physiological one, however interpreted, then it follows that the amount of sensation felt is directly proportional to the amount of molecular disturbance in the cortical centre. And this is probably the true law of psycho-physiological equivalence.

It may perhaps be thought that the duly accredited facts of observation form but a slender basis for a doctrine of equivalence. And yet it is not too much to say that this doctrine forms the corner-stone of the ideal construction of that new branch of scientific investigation known as psycho-physics. If some such quantitative equivalence do not hold good, not only must the whole scheme of psycho-physics crumble into intellectual dust, formless and incoherent, but, in attempting to correlate the objective and

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[1] As the result of an investigation, nearly ready for publication, I believe that the following formula more accurately represents the quantitative relation. The stimulus curve which is correlated with evenly-graded sensation is obtained by adding equal stimulus-increments in steps or stages diminishing in geometrical progression.

subjective aspects of experience, we must abandon any slight claim to precision we may have established; nay more, we must give up all hope of future mathematical exactness. If this indeed be so then must psychology pursue its course in quantitative independence of physics and of physiology. But no modern psychologist will for one moment admit that it can be so. Such a state of things would be so hopelessly irrational that we cannot believe it to be probable.

Reverting now to the distinction, already indicated, between the presentative and the re-presentative elements in consciousness, it is clear that this carries us little beyond the threshold of psychological analysis. Let us proceed to take note of another distinction. In any given state of consciousness there is a wide field of multifarious and coöperating elements. How numerous these elements are we commonly fail to recognise because among them all only a few, constituting a more or less harmonious group, occupy the focus of our attention. We do not count the many subconscious and subsidiary elements which constitute the numerical majority. Their low intensity keeps them in the background. But there they are,—visual objects out of focus, sounds, scents, touches, pressures, gentle admonitions from within the body, and fluttering ideas hovering round, but just failing to reach the focus of attention. The late Professor Clifford tells us that a dignitary of the Church once commented on the remarkable psychological fact that we are only conscious of one thing at a time; to which Clifford replied he could not agree as to the fact; what struck him most forcibly was that we are conscious of fifty thousand things at once and conscious of them in different degrees! Here then we have a second product of psychological analysis,—the distinction between that which occupies the focus of attention and the dimly-peopled margin of the field of consciousness.

We can but briefly indicate some of the products of psychological analysis, sufficient only to illustrate our theme. Thus apart from presentative and re-presentative sensation-elements, focal or marginal, we have a superadded group arising out of a perception of the relationships which hold good among the data so provided,

relationships which have to be considered in dealing with both the objective and the subjective aspects of experience. We have a yet further superadded group constituted by those generalised products of conception which enter into the fabric of all our ideal constructions in science, together with those other ideals which are woven into the tissue of our art, our ethics, and our religion. All these may, nay must, be distinguished in our analysis within the field of cognition; but we should not forget that, as given in the subtle synthesis of our experience, they combine and interact in an extraordinarily complicated system of moving equilibrium. They are the products of psychological dissection. We may dissect a rabbit and place its brain, its heart, its kidneys, and other viscera in duly labelled bottles; we may cut its spinal cord into thin slices and distribute them over microscopic slides; we may set up its skeleton in a glass case. All this we do that we may learn how a living rabbit is constructed and how its several parts co-operate in functional activity. But the products of our analysis no longer constitute a live and active rabbit. So too we may dissect our experience and distribute its elements among the chapters and sections of our psychological text-books. But the products of our analysis no longer constitute living and active experience, wherein all these scattered elements combine in fleeting but vivid synthesis.

Again we may distinguish in our psychology the tones of pleasure and pain which accompany our cognition or active states, and analyse out the visceral contributions to consciousness; the quickened heart-beat, the labored breathing, the creepy skin affections, the "sinking" below the diaphragm, and all those elements which minister so largely to the primary and lower emotional states. We may dissect the subtle surroundings of an act of will or the exercise of deliberate choice. We may distribute the results in separate books of our treatise, and group them under their appropriate headlines. But let us never forget that in experience all these are subtly combined, even as form and color and scent are combined in yonder rose-bud in the garden.

And let us not suppose that the psychological analyst is necessarily forgetful of this synthetic complexity of conscious experi-

ence even when he is employing the analytic method with the utmost rigor. Did Newton forget the synthetic complexity of the solar system when he formulated his abstract laws of motion? Why should we suppose that the psychologist who endeavors to formulate laws of association is forgetful of all that is of scientific validity in the doctrine of the apperceptive unity of consciousness? And if he have recourse to an analogy, which some find helpful, and speak of the combination of psychical elements as the result of a sort of mental chemistry, why should he be supposed to run directly counter to the analogy, and be scoffed at as though he regarded the mental compounds as mere mechanical mixtures? According to the analogy, just as oxygen and hydrogen combine to form something so different from either as water, so do certain motor sensations in the eyes combine with retinal elements to form something so different as the externality or out-there-ness of the object of vision. In each case the result of synthesis has new properties which only experience, there objective and here subjective, can disclose. These, from the scientific standpoint, must be frankly accepted as the facts of experience. Of course, the metaphysician is in neither case content to leave the matter there. He seeks to know the manner of origin. He asks what is the cause of the synthesis. He postulates chemical forces to account for the combination of oxygen and hydrogen to form water, and the synthetic activity of the ego to render conceivable the growth and unification of subjective experience. But such conceptions, even if we regard them as absolutely necessary to enable us to give a rational account of the mode of origin of the phenomena, should be excluded so long as we are dealing, in terms of scientific interpretation, with the modes of sequence which fall under our observation.

So too with the laws of association. We have nothing whatever to do, in psychology as a science, with their *why* or their *raison d'être*. That must be left to metaphysics. These laws, which need not here be recited, formulate in analytic terms certain observed facts of consciousness. *B* and *N*, for example, are two diverse presentative elements which occur in rapid succession; and they become associated in such a manner that the subsequent presenta-

tive recurrence of *B* suggests a re-presentation of *N*. Does any psychologist suppose that either *B* or *N* is isolated as it is actually presented or re-presented in the living and moving complex stream of consciousness? Surely not. They are only isolated in our abstract analytic scheme. The moment we attempt to utilise these analytic results in the interpretation of the psychical phenomena of experience in its entirety, we are forced to take account of the conscious environment by the addition of some qualifying phrase. The recurrence of *B* will suggest, we say, the representative *N* under similar circumstances or under like marginal conditions. Logicians express an analogous conception by saying that the connexions hold good within the same universe of discourse. White specks on the swelling sunlit down suggest sheep: on the glancing sea suggest yachts. The marginal conditions determine in each case the nature of the suggestion,—determine what association shall be effective. The word "box" has many associations; but if my friend on board ship tells me he can box the compass, I have no doubt as to his meaning. The universe of discourse at once decides the point. The laws of association are analytic in their nature and may be expressed in broad generalisations; but they only hold good within any given synthesis under the conditions of that synthesis.

And they express in analytic terms brief abstracts of the facts of observation. We may attempt—not at present with assured success—to correlate the psychological facts with physiological facts. But, supposing our efforts to be successful, that brings us no nearer to an explanation of the *why* of association, which is indeed a metaphysical question and one with which the science of psychology, *qud* science, has nothing whatever to do. In the affairs of the mind there is even more need of distinguishing clearly the proper sphere of metaphysics than there is in the affairs of the body; for psychism is more prevalent among psychologists than is vitalism among biologists. This is probably because the training of the psychologist has so often been primarily metaphysical, and only incidentally, sometimes even very imperfectly, scientific. Remember that I do not say this on the ground that in ultimate philosoph-

ical synthesis metaphysics must be excluded. Far from urging this, I am persuaded that the rational being must either have recourse to metaphysical assumptions or give up the problem of the universe as insoluble. But I am none the less persuaded that the loose commingling of metaphysics with science serves but to darken counsel, and that the metaphysical solution of a scientific problem is like mending a coat with a patch of good-will.

Psychology as a science deals with an observed synthesis and sequence of states of consciousness. It endeavors to correlate its results with an observed biological synthesis and observed physiological sequences. It employs the term "self"—myself, yourself, or another's—as a convenient group-name for a particular observed or inferred synthesis; just as it uses the term "crystal" or "organism" for other observed syntheses. It uses the word "mind," in a sense analogous to that in which the biologist uses the word "life," as a wider group-term under which certain observed or inferred sequences may be conveniently comprised. Forgive the reiteration of the word "observed." Therein lies the heart and soul of science. Inference, for science, is nothing but possible observation under more fortunate circumstances, and with extended powers. And all the sequences which hold good within, and lead up to, any given synthesis should, in psychology as a science, be interpreted in terms of scientific causation. What we have to describe and to explain by reference to broader generalisations is the mode of sequence within the limits of experience in its psychological aspect. The laws of association are abstract and analytic generalisations of this kind. Apperceptive synthesis should sum up the net results of our study in terms of an ideal construction based solely upon scientific observation and inference including under these terms that special mode of observation we call introspection. And the system of psychology we thus elaborate should be freed from every metaphysical implication.

In such a system of psychology the Will as agent has no place.

This assertion may to many sound as ridiculous as the similar contention that in a system of physics as a science Force has no place. The two cases are strictly parallel, and the parallelism is

not without a meaning. In scientific physics Force as an originating cause is out of court because it suggests a manner of origin, the discussion of which falls within the province of metaphysics. But the word "force" may be used as a convenient term for the measure of observed rate of motion or intensity of action. In psychology as a science Will as an originating cause is, for similar reasons, out of court because it too suggests a manner of origin, the discussion of which falls within the province of metaphysics. But the word "will" might well be used in scientific psychology, in a manner analogous to the employment of force by the physicist, as a convenient term for a measure of intensity in psycho-physiological output. But although the cases are in essence strictly parallel the Will is often placed in an anomalous and peculiar position as a sort of middle link between the two ends of a physical and physiological chain. An entomologist sees a rare beetle and deliberately stoops to secure it for his collection. He interprets this in terms first of an objective physical sequence beyond the limits of the retina, and then of a physiological sequence in the retina, optic nerve, and cortical centres of the brain, the latter being accompanied by certain conscious concomitants interpreted in terms of association, apperceptive synthesis, and the rest. Here is interposed the middle link, a fiat of Will. Whereupon occurs another physiological sequence, coördinated motor activities, well-directed movements of his body and fingers in the objective world, and the bagging of the beetle which may start a new train of sequences. Clifford somewhere characterises the absurdity of interpolating psychical links in an objective chain of events in a telling and humorous analogy. It is like a train, he says, in which there is an engine, tender, and two or three coaches duly linked up at one end, and of more coaches with a van at the other end; the two halves being coupled by the sentiments of amity subsisting between the stoker and the guard. Not less absurd, from the scientific standpoint, is the interpolation of a fiat of Will in the midst of either a physical and physiological sequence as interpreted objectively or of a psychological sequence as interpreted subjectively.

We may take it as axiomatic that metaphysical links will ne\ hold together the two halves of a scientific train of thought.

But it will be said that a psychology without any reference voluntary and volitional acts is like a description of the battle Waterloo without any allusion to the Duke of Wellington. T analogy to a certain extent begs the question, at any rate for thc who believe that the essence of history lies in the relationships human wills, and that the teachings of history are rather metaph\ ical than scientific. Let it be clearly understood however that is the will as active agent, the place of which in psychology we he deny. The distinction between instinctive procedure, which m be carried out prior to any guiding experience, and voluntary pı cedure characterised by the augmenting or inhibitory influence higher brain-centres in the light of experience, is a perfectly val and helpful one. Volitional acts may be attributed to the simil influence of yet higher centres. Or apart from physiology, we m say, broadly, that voluntary action involves simple association the light of experience, while volitional acts involve the play motives in the light of conceptual ideals. But these terms, as us in psychology as a science, should be merely descriptive of disti guishable types of antecedence and sequence. Given (*a*) such a\ such results of experience associated in this way, and given (such and such stimulation under assignable circumstances, th (*c*) this voluntary action as a matter of fact follows. With perfe psychological knowledge we might say: These being the antec dents that as a matter of experience is the sequent result. (again, given such and such a synthesis of concepts and ideals (the one hand and such and such motives on the other hand, this the line of conduct which follows in due sequence. That is al *from the scientific point of view.* There is neither room nor need f a fiat of will. To drag it in, as an originating cause, in scientil psychology, is like encumbering our physics with force as the cau of motion. It is out of place—a metaphysical bull in our scientil china-shop.

Have then Force and Will no part to play throughout tl length and breadth of this wonderful universe? Is that the co

clusion to which the science of our day would fain drive us? Are we just set in the midst of a series of inevitable sequences, determinate with nothing to determine them, driven onward with nothing to drive them, purposeful without a purpose, rational without reason, phenomena without a cause, a riddle to which there is no answer, a monstrous puzzle-problem to which it is mere waste of time to wish or hope for a solution? That depends entirely on whether we are content to accept a scientific interpretation of nature and of mind as the be-all and end-all of human endeavor. I am persuaded that science ought not to express an opinion for or against any of the metaphysical postulates above suggested. They lie beyond its special province,—outside the sphere of thought within which its opinions are worthy of the most respectful consideration. Science has indeed a perfect right to assert that neither Force nor Will nor any underlying cause has any place within the ideal constructions which it is the business of science to develop. But it has no right to restrict all thought within the limits of its formulæ. That some men of science seek to do so is unfortunately true; but it is a cause of regret to many who value and admire the achievements of science within its proper sphere.

Now, as we have already seen, it is a fundamental assumption of metaphysics that there exists a cause of the phenomena which we interpret in terms of antecedence and sequence. Let us revert to the crystal as the type of characteristically inorganic phenomena. We allow a solution of sulphur in carbon bisulphide to evaporate. Delicately formed rhombic crystals of sulphur are produced. From the strictly scientific point of view this is simply a matter of observation. Given certain experimental conditions, which we can describe in considerable detail, such crystals are seen to take form. From the metaphysical point of view we say that crystalline force is the cause of the building of the crystals on the rhombic system. Or take the development of a frog from the fertilised ovum. Embryology describes the complex sequence of changes. Metaphysics attributes the facts to the play of vital forces. In neither of these cases, however, have we anything but indirect evidence of the validity of our metaphysical assumptions.

But suppose that the building of the crystal were accompanied by consciousness. The supposition is of course extravagantly improbable and is merely made for illustrative purposes. It is a piece of scaffolding which we can presently remove when it has served its purpose. That fragment of sulphur, we will suppose, has objective experience of the growth of its crystalline body and correlative subjective experience of the sequence of its states of consciousness. But may it not also feel the Force that is working within it? Might it not perchance go so far as to say that this Force was the very soul of its crystal life, objective and subjective, the really essential existence in and through which it was a crystal—it was itself? Pushing its metaphysics a step further, might it not even contend that, through differentiation and interaction, under the conditions of time and space, its own soul and other souls were rendered temporarily distinct from, though in close relation with, each other and the all-soul, only to be reunited when carbon bisulphide should have done its final work of dissolution?

The application of the parable of the crystal needs little elucidation. We at any rate are conscious and have experience. We frame ideal constructions in terms of which we interpret the growth and physiological functioning of our body; we elaborate a system of psychology which deals in generalised terms with the subjective aspect of our experience. We correlate the results we reach in the objective and subjective fields and conclude that consciousness is the concomitant of certain objective molecular changes in the cortical centres of the brain. But do we feel that apart from the sequences of objective and subjective experience we are agents in the metaphysical sense—centres of the interplay of causal Forces? Although it may find no place in the ideal constructions of science, do we find in our own life, regarded as a whole, any basis for the belief in Will? Is there, lying behind the phenomena with which biology and psychology have to deal, a self or ego, of the existence of which we are assured with the assurance of conviction, and to the operation of which we can refer the phenomenal sequences? In a word, is there beneath the surface of bodily changes and psychological concomitants an informing spirit—a quickening soul?

I do not answer these questions. My own opinion or even conviction could have but little weight. But every thoughtful man should give them careful and serious consideration, mindful of the fact that great thinkers, men of wide culture and piercing insight, men freed from the inevitably narrowing influence of specialism, men whose commanding intellect has emancipated them from the bondage of tradition, have given no hesitating answer. I do not counsel subservience to authority. No man's convictions can stand in the place of my own. But modesty, that crowning virtue of the nineteenth century, should at least make us pause before we proclaim that our own rush lights have more illuminating power than the standard lamps whose rays still shine, unquenched after the lapse of centuries.

Assuming that we feel the Force that courses through our being, and that there is, beneath the ripples which constitute the phenomena of psychology, a self whose activity is our will, can we regard this self as a separate and independent existence? If the whole course of history exhibits a stage whereon is enacted a drama in which human wills are the characters, the salient feature is, not the independence but the interdependence which is throughout made manifest. The theatre is this world in which we live. But its phenomena are merely stage-properties; its meaning for history is the play of world-force which lies behind.

And if the essence of history lies in the relations, whether in conflict or co-operation, of human wills, so too does the essence of theology lie in the relation of each individual will to what a modern disciple of Schopenhauer would term the will of the universe. Anything like isolation of the individual will is inconceivable. Differential manifestation under the conditions of time and space is all that we seem logically bound to predicate. And under the conditions of this differential manifestation, is it illogical to believe that in our own soul we dimly feel what is the true nature of the will of the universe? And is it wholly irrational to cherish a hope, a hope that men have long cherished in different forms, that when the differentiation is annulled and the phenomenal garments of time and space are flung aside, the final reunion may be like the merging of

the individual in the social will in a moment of national crisis, the self being caught up in a higher synthesis with all gain and no loss.

These are matters, however, beyond our present theme. Starting with the polarisation of experience into its objective and subjective aspects we have attempted to indicate how each aspect may be dealt with and interpreted through the ideal constructions of science in terms of antecedence and sequence; how the two aspects may be correlated; how force and will should be excluded from any rigidly scientific treatment save as measures of rapidity or intensity of phenomenal change; and how metaphysics may take up the task of trying to explain the universe and human life therein where science, as here limited, ceases to be applicable, endeavoring to frame a synthesis of its own on a different plane and with other canons of interpretation.

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THE MAN OF GENIUS.[1]

GALTON, in his book on Hereditary Genius, presents a classification of men according to their natural gifts, and taking an average analogous to that used in measurements of stature, finds by the method followed by Quetelet an ascending and descending series outside of the average; that is to say, categories of men above and below the average. There are seven of these categories above and seven below the average, those below being designated by the small letters, *a* to *g*, those above by the capitals *A* to *G*. Two other categories, *x* and *X*, are put down as exceptional in order to indicate grades of men below *g* and above *G*. Men in *g* and in *G* may be as rare as one in a million, or even one in ten million. Those in *g*, and more particularly in *x*, would be inferior to dogs or other intelligent animals which on being classified in the same manner would appear in *G*.[2] Following this classification, Galton confines himself to defining the characteristics of those men who stand above the average. He finds them endowed with a natural intellectual ability, united with an eagerness for work and a great power for working.[3] Such qualities urge a man to open for himself a way to eminence by overcoming obstacles of every kind

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[1] Translated from the MS. of Professor Sergi by I. W. Howerth, Ph. D., of the University of Chicago.

[2] Galton, *Hereditary Genius*, p. 12 et seq., second edition, London, 1892.

[3] "By natural abilities I mean those qualities of intellect and disposition which urge and qualify a man to perform acts that lead to reputation. I do not mean capacity without zeal, nor zeal without capacity, nor even a combination of both without an adequate power of doing a great deal of very laborious work." *Op. cit.*, p. 33.

which he may encounter. Whether the social conditions are favorable or not, a man endowed with these qualities cannot be prevented from rising. Favorable social conditions never produce superior men unless there exist in these men superior individual qualities. Hence it may be said that such men are exceptional. They rise above the average, and therefore above mediocrity. They are superior to social conditions, adverse or favorable; are born with natural endowments, and become eminent in spite of their conditions. Galton attempts to show how such men are the result of heredity; hence the motive of his excellent book.

One may seek in vain, however, in Galton's book to find beyond heredity an analysis of the man of genius, or, better still, of men of genius in their particular manifestations and in their physiological and psychological conditions. To prove his thesis it is only necessary for him to deal with their genealogy, and to show that the elements appearing in the man of genius are gifts of inheritance. For this reason such a book is no longer satisfactory. I say no longer, for we now seek to investigate the personality of men of genius and to explain their superiority over the average man.

Passing over certain opinions with weak attempts at demon stration, Cesare Lombroso was the first to attempt a complete explanation of the nature of genius. While there have been researches similar to his outside of Italy, in no other country has the problem awakened so much popular interest, or engaged actively so many minds, and even aroused a reaction with more or less intensity of eeling.

The psychological motive of this reaction lies in the popular conception of the man of genius, namely: That he is a sort of abstract being despoiled of the qualities common to men in general. According to this conception the man of genius ought to act in a different manner from other men. He ought to eat, dress, love, converse, even walk, in a manner peculiar to himself. He ought to have no vice or defect; or, if he does have, they should be peculiar to him alone, quite removed from those belonging to the common run of men. An example of this conception may be found

in a book by Giovanni Bovio upon genius. By creating a genius according to his own fancy, an ideal and abstract being, and not by examining the personality of a real living genius, he naturally arrives at the conclusion that all theories by which the origin of genius is sought to be explained on a basis of observation, and especially that particular one which finds in degeneration the cause or one of the causes of genius, are erroneous. With all such theorists there is no ground for discussion. They are like the worshippers of the saints or of fetishes, who do not recognise the material of which the fetish is made, or the human origin from which the saint has sprung, but, on the contrary, believe them to be endowed with the supernatural or superhuman virtues attributed to them. Such worshippers will not admit any research, critical or otherwise, which may result in revealing the true nature of their object of worship. This need not surprise any one. It is the eternal psychological process revealed in our attitude toward the dead. With rare exceptions the process of abstraction begins as soon as a man passes away. The many or few good qualities which he may have are exalted, the bad eliminated, and in time the bad qualities are totally forgotten, and the good exaggerated, or created if there should not happen to be any. The epitaph inscribed on his tombstone can hardly be said to be mendacious, because in it appears the unconscious and involuntary idealisation which eliminates all his defects.

This phenomenon, manifested by the friends of almost any man who passes away, becomes universal and all the more intense in the case of a really superior man, noted for his qualities as an author, an artist, a savant, or a general. Such a man is soon apotheosised. His vices, however conspicuous, are soon forgotten. It is only necessary to remind the reader of what has happened, and what is now happening, in the case of Napoleon Bonaparte. Only a few persons find in his life any inferior or despicable qualities. His adorers are innumerable. If one goes to the Invalides in Paris one may find a Napoleonic worship like that at the Sepulcher of Christ in Jerusalem. So also of Marie Antoinette, who is

idealised by Frenchmen and who has her altar at the Concergerie. Who would dare to speak of the vices of Marie Antoinette?

This explains the reaction against critical investigation into the character of men of genius, and especially against the degenerative theory of genius; that is, there is an unconscious and popular psychological process which, after death, eliminates the bad qualities and exalts the good, and renders the man of genius abstract and ideal. This process is accentuated by another fact, namely, that the man of genius while living is less esteemed and often without honor at all, or only abroad, because then all his acts are before the public and known. Only after death is he immortalised and apotheosised. Bovio, like others of his kind, does not escape this psychological process. On the contrary, he seems to me to have wonderfully, though unconsciously, illustrated it above all other men, almost as a universal interpreter.

After this explanation I need not trouble myself further with him.

II.

In his *Uomo di Genio* Lombroso embodies a series of observations concerning men of genius, and arranges such men into categories in accordance with the degenerative characteristics which they present, and not according to their productions indicative of genius. Above all he has endeavored to study these degenerative characteristics in the mass, and, to tell the truth, he finds them everywhere and in abundance. But his idea must have originated from noticing the existence of mad geniuses. In fact his book at first bore the title "*Genio e Follia.*" Little by little, as such things usually happen, he distinguishes mad geniuses properly so called from those which have marks of degeneration, somatic and functional, as the psychologists understand them. Hence his degenerative theory naturally arose as a logical sequence of premises grounded upon extended observations.

But this was not sufficient for Lombroso. There was still necessary a general theory which would recognise the genius not simply as a degenerated personality, but also as a person who

works and creates the products of genius. This theory is summed up in the epileptoid psychosis of genius, which is closely analogous to his other theory of the epileptoid nature of the delinquent.

It may be worth while to sum up briefly the arguments advanced by Lombroso to sustain this theory.

First of all I may say that Lombroso gives a very wide, almost indefinite, signification to epileptoid psychosis, and adduces good reasons for doing so. Hence, it must not be understood as that common clinical form with its well-known features of convulsions, loss of consciousness, etc., but as a form more or less hidden, frequently evanescent, and which may escape analysis and observation. Its principal indications are found in lack of character, instability, variation of pursuits, excessive originality, absurdity and absent-mindedness, contradictions, delirium; in erethism and extravagant atony; in creative excitement, in exhaustion and in the unconsciousness of productive effort. To these may be added other indications of more or less importance.

Let us pause here to consider two indications which, according to Lombroso, really assume in the case of genius the force of proofs in regard to epileptoid psychosis. He writes as follows:[1]

"Now, to any one familiar with the so-called binomial or serial law according to which no phenomenon happens by itself, but is always the expression of a series of less obvious but analogous circumstances, the frequency of epilepsy in great men cannot fail to suggest that it is more extended among them than one is at first inclined to believe, and that the very nature of genius itself may be epileptic.

"Moreover, in connexion with this it is important to notice that in those persons in whom convulsions appear only at rare intervals, the psychic equivalent which in this case is the reaction of genius, is more frequent and intense.

"But above all, the identity is shown by the analogy of the epileptic fit to the period of excitement, that violent and active unconsciousness which acts in one creatively and merely throws another into convulsions.

"Remember, too, how much we have pointed out in the confessions of men of genius. In this they all agree, not excluding the chemist and the mathematician whose preparation is certainly more slow and gradual, that the creative fit always manifests itself instantaneously, unconsciously, and intermittently.

"That which more than anything else convinces me," he continues, "is the

[1] *L'uomo di Genio*, Sixth Edition, p. 563, and pp. 23, 27, 40, 126, 127.

analysis of this creative fit, which suggest the identity even to those who are ignorant of the recent discussions in regard to the nature of epilepsy. And it does so not only from the fit being associated frequently with painful insensibility, irregularity, of the pulse, somnambulism, and from its being instantaneous and intermittent but also from its being accompanied by convulsive movements of the limbs, from the amnesia, which frequently follows it, from its being provoked frequently by substances or conditions which give place to or increase cerebral hyperemia and powerful sensations; and finally from its transmuting itself into and being followed by hallucinations."

The conception of degeneration in the man of genius, the idea which has been most bitterly opposed in the Lombrosian doctrine, is just this theory of the epileptoid psychosis; as it is also the idea which is most opposed in his similar doctrine in regard to the delinquent man. This opposition arises chiefly from the fact that the meaning given by Lombroso to epileptoid forms is considered too extended and arbitrary, and because it is not believed that a congenital, degenerative psychosis is to be encountered in all geniuses and delinquents, whether impulsive or not. Other opponents have a general aversion to the degenerative theory of genius on account of many objections more or less important.

But Lombroso does not stop with what we have quoted from him. He seeks a proximate cause of the phenomenon which heretofore has been studied as a clinical fact. He desires to find a fundamental, biological characteristic which may explain the origin of genius; and this biological theory, which is that of the phagocytes, is as follows: "The explanation and the origin of genius is to be found in degeneration; its anomalies, its atavistic regressions, are explained by that struggle which is carried on by the phagocytes of the organs, described by Roux and Metchnikov, which takes place in all great transformations of living organisms, and which leads necessarily to the predominance of one organ, and to the atrophy of others.

"Now (on the basis of the discoveries of the above-named authors) it is easy to explain the inequalities and the atavistic regressions of geniuses. The more powerful one part of their wonderful organisms becomes, the more the other parts become weakened; the more the brain and therefore the intelligence increases,

the weaker becomes the stomach, the muscles, and even the bones. . . . Always one part of the organism suffers from the superior excellence of other parts."[1]

But a few years after he promulgated this biological theory of genius, the author published another book,[2] in which, under the influence of the works of Vandervelde and Massart concerning regressive evolution,[3] he introduces without saying anything more of phagocytes, this new conception, of regressive evolution, in order to explain the origin of the genius. This conception, however, seems to me erroneous, as does even the expression, *regressive evolution;* because this is only *involution* of organs or parts of organs, as one may see clearly from the very examples given by the two Belgian authors. The wish to apply such a theory, whatever be its name, seems strange to me, and the attempt is not conclusive.

The involution (the regressive evolution of the authors cited) of an organ, or of parts of an organ, while a new one appears, or is developed if already existing, implies that it has already been developed and active, and that on account of changed conditions or new adaptations it has been reduced, or has disappeared, while another has grown or has been brought into existence. Does this happen in the case of the man of genius? I think not, because in him genius is entirely an individual phenomenon and has no relation to the conditions of existence which may or may not be changed. It might even be said, that in genius almost the reverse happens, that is, his individuality does not always conform to external conditions, and frequently is antagonistic to them. This new attempt by Lombroso at a biological theory of genius, shows only one thing, as it appears to me, and that is that up to date the author who has established the fact of degeneration in the man of genius, has not been successful in finding a safe biological theory which explains the origin of genius.

Lombroso's theory of genius, as he has been presenting it for many years, especially that part of it respecting its degenerative

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[1] *Op. cit.*, p. 630 et seq. [2] *Genio e degenerazione.* Palermo, 1898.
[3] Paris. Alcan, 1897.

genesis and the manifestations of epileptoid psychosis, has been widely discussed both in Italy and elsewhere.[1] In Italy the inquest held to determine the madness of Guy de Maupassant[2] resulted in the acceptance of it, either in whole or in part, by some of our psychiatrists. Among these the first place belongs to Tamburini, who has written that "Genius is undoubtedly an anomaly in the human species, hence the efficient cause of it can only be an anomalous congenital condition of the brain, whose reasoning power in men of genius (especially in those in whom the manifestations of genius have an especially one-sided character) is based upon a hereditary, degenerative neuropathic condition."

Silvio Tonnini concludes one of his communications by saying that "This precious and rare fruit, which is genius, finds a better soil in degenerates, because degeneration signifies asymmetry and an unbalanced condition. . . . Genius being understood to be a result of this unbalanced condition of the nervous system, Lombroso's idea of the epileptic equivalent of genius is quite correct."

Dr. Silvio Venturi, who also advances a theory, claims in substance that "Genius is a *divergent characteristic*, and expresses a congenital anomaly; is a product of a degenerate condition, and yet the genius himself may not be a degenerate although degeneracy is a factor in every variety of genius."[3] This leaves much to explain, for the divergence which produces a variety, as in the animal species, is a phenomenon of progressive evolution. It would appear that Venturi regards genius in the same light as Morselli, since he congratulates himself that Morselli "has accepted his doctrine." But it seems to me that the idea of Morselli may be different, although it apparently coincides with that of Venturi.

Venturi in fact, although he claims that genius is a divergent characteristic, accepts the Lombrosian idea that it is a product of degeneracy, a doctrine which Morselli concedes. According to this

[1] Even the editor of *The Monist* has given it some attention—April, 1896, in the "Nature of Pleasure and Pain," p. 432 et seq.

[2] Bianchi. Milan, 1892.

[3] *Le degenerazioni psico-sessuali*, p. 272 et seq. Turin, 1892. See also the letter to Bianchi, *cit.*

psychiatrist, genius is a phenomenon of *progressive, divergent variation;* for he says, "If organic evolution has resulted in the development of lower forms into higher forms; if the mind is perfected parallel with and in proportion to morphological development, it is evident that in every epoch of the world, in every phase of the phylogenetic series, there have existed *divergent variations in a progressive sense* and hence individual geniuses." And he adds, "Nor may it be objected that this idea is in the nature of a paradox. Comparing the one with the other, I do not believe the *biological* conception of genius is any more extravagant than the *pathological* conception that it has a degenerative basis."[1] This biological conception points toward that of Max Nordau, according to which genius "is the first appearance of an individual of new functions, and hence of new tissues, destined to become typical for the entire species."[2]

This interpretation of the nature of genius errs from an inexact application of the Darwinian hypothesis. Any one who is thoroughly acquainted with the doctrine of organic evolution knows very well that according to Darwin a useful variation may constitute a divergent characteristic, and may serve in the survival of those better fitted to the conditions of existence. This divergent characteristic, when it is fixed by heredity, creates a variety, which may slowly pass into a species. Now any one who will consider a variation which in a certain individual is looked upon as a mark of genius will find, as a rule, that it does not represent an adaptation to the conditions of the environment, or that it is so only exceptionally, and hence is in opposition to the characteristics of organic variations which serve toward adaptation. Oftentimes a genius leaves no descendant, which is contrary to the supposition that genius is a characteristic aiding survival. Consequently there are found in genius these two conditions which do not correspond to philogeny in the sense of Morselli and of Nordau. There cannot

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[1] Bianchi. *Inchiesta. cit.*

[2] In Lombroso, *Genio e degenerazione, cit.*, p. 247. Compare the preface of the sec. edition of *Degenerazione* by Max Nordau. Turin, Bocca, 1896.

be in it, therefore, that characteristic which is invoked by the two authors as a biological interpretation of the appearance of genius. Even the expression of Morselli that, "The mind is perfected parallel with and in proportion to morphological development," is not always correct. It is a vague expression which may be easily contradicted.

The conception of Venturi, who claims that genius is a divergent characteristic and a factor of variation, but still finds that it is the product of degeneracy, reminds one of that other conception of Virchow, who believes himself able to explain pathologically every organic variation, and would so explain even the origins of the human races.[1] But this coincidence is accidental, although it is true that Venturi himself rejoices that Morselli has accepted his idea of *progressive variation* in genius. Now on account of the character of these variations one is not able to accept the opinion of these two illustrious authors; for it is not rational, nor does it conform to the evolutionary theory, nor to the facts in regard to men of genius. Another matter is the proposition that genius brings on social, scientific, and artistic evolution. Such evolution, being the effect of the activity of genius, would not serve to explain the nature of the authors of progress. This is not, however, the proposition of Lombroso, who is interested in explaining the personality of genius, never its effects.[2]

III.

If we turn to the researches of Galton, we find that the genius is a rather rare being; may be so rare that we shall have scarcely one in a million, or even one in ten millions of men. True it is that Galton establishes a proportion between geniuses and men below the average, but I believe it does not correspond to the number of those below the average. Because if it is true that in the population of the United States of America there are one hundred

[1] *Rassenbildung und Erblichkeit*, Festschrift für Bastian. Berlin, 1896.

[2] There may be found in the *Inquest* of Bianchi the opinions of Tanzi, Amadoi, Fugerio, Zuccarelli, and of others. And besides, Prof. L. Bianchi of Naples, Del Greco, Montalto, have written on the subject in various scientific reviews.

thousand defectives, this is beyond the calculation of Galton, and has no correspondence to the actual number of geniuses who are quite few in comparison with them. There ought to be about seventy geniuses to seven hundred defectives. Inferior men are not then so exceptional as geniuses, but they must always form the extremity of the scale of human intelligence opposite the superior men.

At all events it may be affirmed that these extreme individuals, whatever their number may be, constitute divergence from the human average, and a divergence is an abnormality when it does not consist in a slight oscillation about the average of intelligence. It is an eccentricity when it does not enter into the common orbit. Just as the orbit of a comet, which is so widely divergent from that of the other bodies which move around the sun, is also eccentric. Concerning the characteristics of defectives, idiots and other individuals of this kind, there is no question. They are considered by all as being abnormal, with the title of degenerates, as we are accustomed to call them to-day. All doubt and discussion is in regard to the other divergents from the average, the geniuses.

If we should stop with the Galtonian proportion alone, we should affirm that even geniuses are degenerates; abnormal, since they are exceptional, and then we should have before us the Lombrosian doctrine complete. If then we should wish to look upon men of genius not as to their complete personality, but as to the superiority of their productions and their actions, we should have to say with Morselli, Nordau, and Venturi that they constitute an evolutional and progressive divergence. If we should stand by the abstractions of the philosophers and the sentimentalists, we should regard perfection as the human ideal. But we have already said that the latter do not study the living man of genius with all of his attributes, and hence they have no concrete conception of him; while the former have not demonstrated, and cannot demonstrate, that their theory is in accord with the doctrine of evolution, which they inaccurately invoke. From the earliest times, men of genius have always been rare and exceptional. There has never existed a race or a new variety which preserved the characteristics of su-

periority. On the contrary, it often, almost always, happens that with them the intellectual superiority is extinguished. Biologically, then, geniuses are not to be studied as a new variety, nor do all divergent characteristics which they possess constitute characteristics of a variety.

There now remains for the interpretation of the superior nature of genius only the theory of degeneration; and this I propose to examine to find out whether it truly corresponds to the facts, and to the manifestations of the man of genius; and as to whether that peculiar and personal theory of Lombroso is complete and able to sustain itself in its special and characteristic features.

IV.

On restudying Lombroso's book on genius, it appears to me that he has undoubtedly demonstrated that intellectual excellence, in whatever form it may manifest itself so as to be considered of the nature of genius, is united to physical and mental degeneration, understanding by this apparently vague and indefinite expression the unbalanced condition of the psychologic functions; physical and functional arrests of development of every kind, disease well determined from a clinical aspect, etc. It must be understood, however, that all these conditions ought not to be found, and are never to be found, united in a single individual who may have some of these conditions of degeneracy. Even many of the adversaries of the Lombrosian theory have been constrained to admit this fact, if it is such, at least in many cases; but it must be observed that it is quite another thing to speak, as some do, of phenomena and manifestations of degeneracy as effects of abuses of physical and mental energy, and of phenomena which appear in childhood and go on developing through life, as is the case in ordinary individuals.

It is necessary, however, to take into account the effect consequent upon the abuse of energy, in order to measure the resistance of the organism. Alexander von Humboldt was able to work laboriously up to eighty years of age, and manifested no weakness or exhaustion as effects of excess of work. Even Goethe was able

to employ all his mental energies up to the last days of his life, and at eighty-one years finished the writing of the second part of *Faust* without showing any signs of weakness in the work. But Alessandro Manzoni after his thirtieth year could work no more. His intellectual work is therefore insignificant in comparison with that of the two Germans. The only valuable work of his which remains is his *Promessi Sposi*, although he lived to be an old man, and was apparently in good health. Hence resistance to labor must be brought into calculation in a judgment concerning the personal conditions of men of genius. A precocious exhaustion of the intellectual powers may indicate a degenerate state in the individual who undergoes it.

But the problem, as I look at it, is quite a different one. Admitting degeneration in the genius it is this: what are the relations existing among the activities, the degenerate states, and the highest superiority of mind in the genius? Are they causal, are they simply concomitant, or are they accidental, as even some alienists contend?

Lombroso did not set out to show that degeneration is an efficient cause of genius, but he has clearly shown that this is his conception. I say that he did not set out to show this, because he did not so state the problem, but he really attempted to solve it. His demonstration, however, does not appear to me satisfactory or complete, because he chiefly studied to reveal all the degenerative marks of the man of genius, and then presented them as general characteristics of geniuses. It is true that he finally found an epileptoid psychosis in which he wished to include all the operations of genius; but even this could only serve to explain generically the moment of the creative activity, and not the presence of the many different degenerative characteristics, which are found in men of genius and influence their activity.

He himself felt the need of filling up the gap, and as we have seen had recourse once to the phagocytic theory, and then to regressive evolution, in order that he might have a general theory of the mental conditions of the genius. If we should admit one of these two theories, we should find ourselves, curiously enough, accepting the evolutionary theory of Morselli, of Nordau and of Ven-

turi; for the so-called regressive evolution implies, as we have seen, progressive evolution; and, as a result, phagocytism is referred to the same phenomenon. That is to say, it would not be want of equilibrium, but adaptation (hence equilibrium) of the genius to the conditions favorable to his existence. Now this is not the conception of Lombroso, nor can it be found in the conception of genius according to his degenerative theory. It would indeed have been in contradiction to it.

It must be confessed that, in spite of the fact that so many besides his own have been unfolded, and in spite of the fact that so many have attempted to beat it down, no one up to date has brought forth better a better theory concerning men of genius than Lombroso. And we cannot help admiring this man of genius, who unites with a profound intuition a copious analysis of the facts and observations before which all the adversaries of every type attempt, in vain, by every means to overthrow him. He is firm in his position, and fights without yielding a step, and without wavering in his convictions. This firmness in him, and the esteem united with admiration which I feel for him, embolden me to speak my opinion of his theories, and to express a judgment concerning the man of genius.

In the first place it appears to me that genius must be something more simple than it is usually supposed to be; and that in undertaking to investigate it by analysis it flees from us and vanishes, leaving only qualities common to all men. Such an investigation is in some degree analogous to that concerning æsthetic beauty, of which, when we strive to investigate the elements of which it is composed, there remain only straight or curved lines, or a combination of them; just as we find in objects of common beauty, and even in those not beautiful.

It is worse still when it is affirmed that genius exists in the fineness or profundity of perceptions, or in large imaginative faculties, or in strong and multiform memory, or in tenacious and indomitable will; for it is easy to find men of genius with weak imaginative powers, with one-sided memories, or with superficial perceptive faculties; and, more frequently than is supposed, *abulia*

is found instead of a strong and energetic will. All this arouses the suspicion that the characteristics of men of genuis are not to be found in such psychological elements.

The delusion becomes all the greater when it is thought that the man of genius must be complete in all his faculties, integral, universal, so that he is of more value than many men; that he sees everything at a glance. Men of genius are very frequently one-sided, with a limited horizon, and have only one direction in which they turn their minds and their activities, and outside of which they are nothing, inferior to common men, frequently infantine. Very rarely are they men who are relatively complete. Such one-sidedness makes them appear strange, even mad, as sometimes they are, always eccentric and frequently unbalanced. Examples may be found in the book of Lombroso, and I may therefore dispense with them here.

The man of genius, therefore, from what I have said, is and must be an eccentric, one who departs from the common orbit in which other men are accustomed to move; and if it is admitted that in the normal man, in his psychic functions, there ought to be found a correlation of development and manifestation, in the genius, on the contrary, this correlation is interrupted—one function finding itself exalted by the abasement of another; that is, there is an unbalanced condition.

But the unbalanced and the eccentrics do not constitute a unique class, nor are they such from a single cause. I do not believe that there can properly be constructed a scale of one to a thousand, or one to a million, to gather them up and classify them, as some have wished to do. There are those who are defectives in the widest signification of the word, retarded in their development, and who possess no eminent qualities. But in a classification, these should not be brought into relation with those in which, along with deficiency, is found an excellence of one quality which almost serves as a recompense for the weakness of others. There are others who have common qualities like those of normal men united with deficiencies, as in the lower grades of the Galtonian scale. Hence it would be inexact, even erroneous, to put together these

three categories which may have in common some defects but not any other quality. It would not be logical to classify together delinquents, mattoids, cretons, defectives, and men of genius. The Galtonian scale may be considered exact only in so far as men superior to the average are placed opposite those who are inferior.

Here we have come, however, upon a confirmation of the degenerative theory of Lombroso, and we ask at once, From what is the unbalanced condition in the man of genius derived? It seems to me that it ought to be derived from the physical degeneration more or less visible of the organs, understanding by degeneration, that which departs from the normal nature, or from the proper correlation of parts or organs, or of psychological and physiological functions. Degeneration may be complete, or partial, and may be little noticeable or not at all, that is, it may escape observation from the absence of exterior signs. This is well known and is always encountered in mental diseases in which the physical degenerative characteristics are sometimes distinguishable either before or after death; and in other cases in which they may escape analysis of any sort whatever. The same thing may be affirmed of the great, unbalanced degenerate who is called a genius.

Of this we are convinced, and hence we think that one kind of genius has its origin in degeneration. The great difficulty consists now in determining the specific conditions favorable to the various manifestations of genius. Galileo, Newton, Rossini, Beethoven, were geniuses, but how much diversity among them! Lombroso recognises the unbalanced condition of such men, not so much in regard to those qualities or to those characteristics which make them geniuses, but rather in regard to those qualities, I would say, which are negative, and which produce an unbalanced condition, that is, their deficiencies. This is why the common herd has tried to cry down the psychiatrist of Turin, while some scientists consider such deficiencies accidental, not comprehending that this recognition points naturally to a solution of the problem and opens a just way to study it and to interpret it.

Certainly the degenerative characteristics of a man of genius cannot be of a nature different or opposed to those of a delinquent,

for they are found in organs and functions of beings alike human. There exists no assimilation, however, between the man of genius and the delinquent, but an assimilation between the degenerative characteristics of men, whatever may be their value, their merit or demerit; just as the normal organs of the genius are not different from those of other men.

The opponents of the degenerative theory, while they are astonished to learn that degenerative characteristics are found in men of genius as they are found in the insane and the delinquents, do not comprehend that they ought equally to be astonished to find that the stomach and the heart of Galileo functioned just the same as those of any other man. They ought to know that the problem presents itself in the form of a paradox, that is, that those characteristics which apparently ought to degrade an individual, really exalt him and render him superior. It is, therefore, necessary to explain the paradox, if one is able to do so, not to deny the facts which in my belief are well established.

V.

But is the epileptoid psychosis of Lombroso the common characteristic of men of genius, the universal degenerative mark to which all the manifestations of genius may be reduced? Lombroso does not exactly say so, but from a fair interpretation of his thought it would seem that all degenerative characteristics or marks of degeneration which he has found in men of genius, can be nothing else than an index of the epileptoid nature of every one of them. If this is not so, it is impossible to understand what purpose these degenerative characteristics may serve, what function they have, or whether they are something in addition to the epileptoid psychosis. This leads me to an analysis of the Lombrosian doctrine and of the arguments he adduces to establish it.

In the preceding pages I have transcribed literally the principal and characteristic reasons which led Lombroso to think that the manifestations of genius, as for instance its products, confirm the idea of its epileptoid nature. These are the analogy of the epileptic fit with the period of creative excitement, both being an

active and violent unconsciousness which acts creatively in the genius and convulsively in the epileptic, and that whatever the intermittency of the creative fit, it is always instantaneous and unconscious. The apparent analogy is wholly in favor of Lombroso, and more than that, it appears to me that the conception of the *psychic equivalent*, corresponding to the creation of products indicating genius, and which takes the place of the convulsive movements of epileptics, has a great value. While it may not be true, this conception is profound, and I may add that though it is not universal among men of genius, as its author believes, it may certainly easily be found in some, and hence is true for some manifestations of genius.

Before all we must know whether those somatic and psychological anomalies discovered in men of genius, independently of the creative instant, have any direct or causal relation with it; whether these characteristics which reveal the epileptoid nature of a man have an intimate relation or not with the creative instant in genius. Now, this is difficult to establish. But Lombroso does not doubt that, given the morbid nature of the man of genius, such relation exists; and it is possible.

But there is one point upon which I do not agree with Lombroso, and that is that unexpected and instantaneous production and unconsciousness of the phenomenon is peculiar to genius. In an analysis which I have recently made,[1] I think I have established the fact that the thought of every man is *always* elaborated in unconsciousness, and is manifested in consciousness only when it is complete. Not only this, but I have also shown, I think, that although the thought is completed and elaborated in unconsciousness, its appearance is instantaneous, and this is so in every man, even in early life. Hence I have resurrected the doctrine of Sir William Hamilton, who many years ago in his lectures at the University of Edinburgh, after some analysis affirmed that "What we are conscious of is constructed out of what we are not conscious of,

[1] *Pensare senza coscienza* In *Rivista moderne di coltura*. Florence, 1897. II., 1.

—that our whole knowledge, in fact, is made up of the unknown and the incognisable. . . . It is thus demonstratively proved that latent agencies—manifestations of which we are unconscious—must be admitted as a ground-work of Phenomenology of Mind.[1]

I have referred to many examples of this phenomenon which are well known in psychology but badly interpreted; and I have also given an interpretation which would put an end to the discussion concerning the psychological and the physiological element in psychic phenomena.

It appears to me, therefore, that instantaneous and unconscious production are not peculiar to the genius, but facts which are common to all men. I have elsewhere written: "If consciousness is only a form of the manifestation of psychic phenomena when they are complete, if the elaboration of thought and invention under every aspect takes place in the cerebral depths without producing the least hint of labor, it does not seem to me that there is the least question as to whether the creations of genius are unconscious or not. Necessarily the creative work of the genius, like that of all ordinary men of talent, is occult, and there is nothing new or extraordinary about it. . . . If it happens that the products of genius seem to be due to a kind of inspiration, in art as well as in science, it is because these products have an exceptional value, while those of other men pass unobserved.

"If Newton and Galileo had been dependent upon voluntary or conscious reason for finding those natural laws which they arrived at, they would never have found them, because they would never have been able consciously or voluntarily to find out all the paths which lead to these results, being more ignorant in regard to them than we are to-day. These paths are as intricate as a labyrinth, and no one could find the way out unless he were led by a fixed and definite idea which would serve as a guide and a light in the obscure cerebral depths. Cerebration took place around that fixed idea and led to the discovery or the solution." To what I have here said, and elsewhere demonstrated, I may add that when we

[1] *Lectures on Metaphysics and Logic.* Sec. 18 and 19. Edinburgh, 1877.

wish to think consciously upon a problem, we almost never succeed, because then the thought is superficial and not profound as when it takes place in absolute unconsciousness. From this other fact we arrive at another deduction, namely: that the depth of unconsciousness is in direct relation to the intensity of thought, and that those men who think less unconsciously than others are the superficial, the vulgar, the common, and hence they have not produced anything new and extraordinary, like those who think in absolute and profound unconsciousness. Perhaps then the emergence of a new thought from such a depth gives to it an appearance more surprising and striking than that of superficial thought; but this does not prevent the one or the other from being unconscious elaborations and instantaneous appearances. This interpretation of the work of the brain in thinking takes away the pathological character of cerebral activity, and of the instantaneous appearance of the productions of genius which Lombroso would claim for them.

This condition of unconsciousness in the phases of psychic phenomena, I think I have shown also by examples. I would recall the fact that I have thus interpreted psychic phenomena for more than twenty years. This being the case if I am not deceived, I do not wish any misunderstanding to arise as to my contentions in relation to those of Lombroso; that is, I would not wish to be understood as saying that the productions of genius in the moment of cerebral excitement, to use Lombroso's phrase, remains unconscious as in an epileptoid fit when the movement and everything in regard to the afflicted person remains unconscious to him; because if it were so the genius could never have created anything, or his production would be worth nothing, not being able to be made available. I mean to say that unconsciousness exists in the cerebral preparation, in the working out of the phenomena. But when all this has been completed the phenomenon becomes conscious. And this is true with the man of genius when he creates any new thing whatever, either in science or in art.

If the idea of Lombroso concerning the epileptoid, and therefore pathological, character of the bursting forth of genius in an instantaneous and unconscious manifestation does not appear to me

tenable, the affirmation of Morselli that he would attribute to genius a hyper-consciousness, that is a consciousness clearer and more intense than that of the normal and common man, because, as he says, the conscious mental energy of the genius is concentrated at a single point and not diffused or suspended, seems to me completely erroneous; and for reasons accepted, and which it is not necessary to repeat, this conception signifies nothing.

But if the instantaneous appearance of the product of unconscious activity indicating genius is, as I have said, neither epileptoid nor pathological may not the whole unconscious process be determined by some other pathological characteristic? This appears to me to merit some consideration.

Newton on being asked how he managed to discover the law of gravitation replied, "By always thinking about it;" and Sir Rowan Hamilton, the author of Quaternions, confesses that for fifteen years the problem, the solution of which came to him suddenly while crossing a bridge in Dublin, had so to speak knocked at the door of his consciousness. Now who does not see in this the influence of a fixed idea which continually tormented the man of genius, and which became a focus around which all the rays of his intellectual activity converged! It appears to me that one thought gained possession of his mind, became a delirious idea which continually persecuted and tormented him until the solution of the problem it represented was found, that is, until he arrived at the satisfaction of the sentiment which had aroused it. The difference between such a fixed idea of the genius and that of the common insane person is chiefly in its content. The fixed idea of the insane person can have no realisation, no definite end; that of the genius has a possible realisation. If this is so, the phenomenon has a pathological character which fortunately has a relief and an end in the creation of the genius. This demonstrates also the one-sidedness of the genius, on account of which other activities may not have a normal and correlative unfolding as in the well-balanced man.

But there is another difference between the man of genius who is tormented as in a delirium by a fixed idea, and the ordinary de-

ranged person. To the first, the idea arises from a clear vision of observed, even common place, phenomena; but to the other it is a superficial sensation which dominates in consciousness. And this points to another difference in regard to the profundity of the unconscious activity which both the normal man and the genius have in common, and that is that in one it is like a shallow sea, while in the other it is a sea of unfathomable depth, and thought arising from the cerebral abyss to the light of consciousness seems so much the more instantaneous and unconscious as the depth is great.

This is pathological, not normal, and accords with the Lombrosian idea of the pathology of genius, if it is separated from it in some particulars through its interpretation. But it agrees also in the fact of the anomalous condition of men of genius, and hence in the various marks of degeneration which are encountered in them, as also in abnormal beings.

But even here it is necessary that we pause to say that while what we have said of a fixed idea like that of Newton, of Columbus and others, is true in certain cases of the manifestations of the man of genius, and as a rule happens in science, in mechanics, and in scientific applications, it does not always hold. There is not always the phenomenon of a fixed idea which occupies the whole thought of the genius. There are other different forms of the manifestations of genius, if not wholly at least in part, and in their mode of presenting themselves. To reduce all to a simple unity and to a unique cause would be a scientific ideal, but it would not always correspond to reality.

A little while ago I said that the fixed idea arises in the man of genius from a clear vision of observed phenomena, and in fact, whether it is Newton seeking the law of falling bodies in the movement of bodies around a greater one; whether it is Galileo studying the isochronous movements of the pendulum; whether it is Columbus, who *sees* the sphericity of the earth, all this is a vision of phenomena which all observe, that is, which present themselves to all but which no one really sees but the man of genius. Commonly this vision is called intuition, which signifies *to see*, and is applied to the power of seeing deep into things, and not to a su-

perficial vision. Let us examine it a little further. I will be as brief as possible.

VI.

Intuition according to my interpretation is referable to perceptivity, and while there is a perceiving that which stands outside of ourselves, commonly called external reality, with the sensible qualities of matter which provoke sensations, there is also a perception of the relation of sensible qualities themselves with that which may be understood as reality deprived of them. Such a perception may not be wholly referred to visible and tangible objectivity, but remains as a mode of seeing that which is not visible, and becomes an interpretation of that which is visible or sensible in general, anterior to every analysis and to every judgment, which facts may in consequence conform to the exactness of the intuition. But a precisely similar internal sense, as it should be denominated, may also delude and draw into errors of many kinds, especially in the facts which have a direct relation to practical life or to the consequences of scientific principles. The principal characteristic of intuition is its immediate presentation; that is to say, it manifests itself without any other intermediate function beyond that which presents the matter by which it is explained.

Hence in order to be better understood, I may indicate intuition as an intellectual vision, as a characteristic internal sense which may be obtuse or acute, which may be slow to reveal itself, or rapid and instantaneous. In men of genius this vision ought to be like the direct and clear vision of the central part of the retina, hence it ought to have greater intellectual clearness united with greater profundity of penetration. The revelation of an idea leading to the solution of a problem, is the effect of this intuition, and then the problem becomes the object of persistent research; it is like a delirious idea. Here there is no doubt that the excess of mental development in this direction must be interpreted by the state of functional unequilibrium which the phenomenon indicates.

It is in science and in intellectual activity where this intuition of genius is most manifested. In this case it ought not to be con-

founded with automatic activity produced by experience or by adaptation. When Napoleon, having come upon the field of battle, sees at once the outcome of the struggle between the two hostile armies, it is intuition; and this is true also in regard to those discoveries of a scientific character which have reference to the interpretation of reality. Inventions depend absolutely upon it. Nor is this intuition easy to acquire, for it is a congenital phenomenon; as congenital as the intuitive obtuseness, the mental half-blindness, called by me on another occasion, mental ambliopia.

But in men of genius of another type, as artists for instance, there is often, it seems to me, another form of intuition which has another basis and another manner of manifesting itself. In true intuition as an inward sense, the sensible qualities of matter which produce sensations have no real and primary value, but are valuable only as matter of interpretation. To the artist, however, as for instance the painter, they acquire an exceptional value from an intensity of impression which they produce on him. This impression is superficial in respect to intuition which is profound, sensory only and not intellectual, for which reason it may be called *impressionability*, and the artist who feels it an *impressionist*.

In such a case the intuition, or the visual mentality in regard to sensible qualities, is almost nothing, and the whole is sensory impression. Color, form, situation, light in various gradations, make such powerful impressions upon the artist as cannot be comprehended by those who have not experienced them. But such excessive sensibility to external impressions of sensible qualities is at the expense of pure mentality. While the artist truly represents phenomenal nature, he has no index of the signification of the rock which he pictures, or of the living nature which he attempts to represent with artificial colors.

So any one who looks closely will perceive a characteristic difference between the intuitionist and the impressionist in men of genius. The one has a penetrating and profound insight into sensible forms which make superficial impressions, but sufficient because they are observed. The other receives an intense but superficial impression of the sensible forms themselves but stops there.

Hence I would say that defects of an opposite character, and developments of an equally opposite character, may give two types of genius, the inventor or scientist, and the artist.

Nor does it seem to me that there is any difference between the painter and the musician. The musician is also an impressionist, and must have a most agile and lively fancy for the creation of various and multiplex musical combinations. But fancy does not arise out of a superficial order of sensory impressions of which it is a reproduction and a recomposition. The exaggerated activity of such a faculty leads necessarily to an unbalanced condition in the mental life of the artist. We therefore do not wonder at what is known of Beethoven, Donizetti, Wagner and others; just as we do not wonder at Salvator Rosa and other celebrated eccentric artists unbalanced in their functions. The liveliness of their impressions ought naturally to bring illusions, hallucinations, deliriums, disturbances and even instabilities in the practical activity of the artists.

If I should attempt here to interpret all kinds of genius and all the forms of this manifestation, I would say the same thing of poets and all other kinds of artists, and show how the differences of poetic production depend upon temperament, and upon certain special and personal conditions; how there are poet colorists and poets who may be called intuitionists, who neglect objective nature, and represent in art the intimate manifestations of the individual or universal life. But I must regard the limits imposed upon me in this study, and perhaps what I have already said will be sufficient.

VII.

From what has been said up to this point it is easy to argue that as men of genius are unbalanced because the correlation of development in their psychological functions is not preserved, and because some of these functions are developed at the expense of others, there is degeneration; as may easily be shown by the characteristic signs which are encountered in these men. And this may reach often to madness, as is illustrated in the undeniable examples of Donizetti and Tasso, or to an unbalanced condition which is

little short of madness, or to peculiarities in manner of living, or of comporting themselves in every-day life, or inability to adapt themselves to practical exigencies, or childishness in certain psychological manifestations, etc.

But this does not solve the problem in its paradoxical form that degeneration is a cause of genius, for it may still be objected that degeneration is not a cause but only a concomitant more or less necessary or accidental, and the objection is not a light one. If it should happen that genius is always and everywhere found constantly united to degeneration, and should not be considered from a biological aspect, as some would wish, as a superiority arising from the fact of evolution in humanity, and as a pathological phenomenon, perhaps the solution of the problem would be less difficult. And here is just the most difficult point to get around, although Lombroso has, as it appears to me, already largely demonstrated it. Then comes that other problem above enunciated. Admitting the constancy of the relation between genius and degeneration, it is not a question of simple concomitance but of causal relation, and there appears as the result the incontestable fact that genius, if it is a pathological, abnormal divergence, must have its origin in degeneration. Of this we are fully convinced.

This problem being solved, others appear. May all the degeneration in genius, for example, be reduced to a single cause, to the epileptoid psychosis of Lombroso? From the analysis which I have made, I must reply in the negative. It is possible that there may be, even are, facts which confirm the epileptoid psychosis. But it does not appear to me that this is a universal cause, or that it explains all the manifestations of genius. Intuition, as I have said, united with unconsciousness is not an exceptional phenomenon; nor is a diseased condition, much less if it is of an epileptoid type, that is, the increase of degree and therefore of intensity and profundity at the expense of other psychological manifestations, or the lack of it from a compensation of excessive development in other manifestations, able to explain the unbalanced condition, which may not be referred to epileptoid degeneration, at least not always.

For these reasons I believe that the forms of psychosis which may be encountered in genius are various; and instead of reducing them to a single cause not always capable of being adapted to the multiform productions of genius, I believe that a multiplicity and variety of psychoses are more suitable to the nature of genius. Consequently it appears to me that we must now place this famous and much discussed problem upon a more practical ground.

These considerations lead us to recognise a fact which has already been pointed out, namely: that geniuses are not all made after the same pattern and by a single cause, but are various and diverse and of many origins, and that the final solution of the problem can only be arrived at when we have examined individually the genius in his superior characteristics and in his deficiencies, and have put these facts into relation with his productions, in order to find out the causal dependence, if any exists. So long as we do not consider the phenomenon in its general characteristics, but as if there were only one cause which produces it, we shall not arrive at a final interpretation.

This investigation, perhaps, is the most difficult of all, because, while it is not difficult to know what the deficiencies of men of genius are, it is very difficult to discover a definite causal nexus between them and the products of their genius. Why was Rossini a musical genius and Michael Angelo a genius in sculpture and painting? Why was Galileo a genius in the physical and mechanical sciences and Darwin in biology? Who knows! And although according to Lombroso we may declare epileptoid psychosis to be a final cause, we may not in this way demonstrate the origin of so many varieties of genius. Even if we should accept the phagocyte theory or that of regressive evolution, we should still have always before us this fact which resists every comprehensive and general interpretation.

Nor may we accept the idea of some who, admitting the fact of degeneration in genius, think they find quantitative differences in it. It seems to me that while there are differences in men of genius, they are qualitative, not quantitative. We have no means of measuring them. Great men are geniuses, or they are not. If we

descend from the high level of the genius, we shall have either caricatures or malformations. Great men are not all and always geniuses, in spite of the fact that they may seem to touch the height of genius.

In conclusion it may be affirmed that one fact may now be considered as established, namely: that degeneration is a proximate cause of genius; that is, that genius is dependent upon a pathological fact, and the establishment of this fact constitutes no small merit in Lombroso. But the solution of the problem in regard to the origin of the varieties of genius and of its ultimate cause, if there is one, is reserved for the future.

VIII.

I ought not to bring this discussion to a close without saying a word about the effect of social influences on the man of genius; because there are those who think and write that the genius is a product of the environment in which he lives. I have had occasion to criticise this doctrine which practically abolishes the personality of the genius, or gives it a secondary place, but it seems necessary to return to it here.

First of all it will be well to distinguish between two facts in this influence, namely: the aid and the obstacles in his development which the genius finds in society; and the needs, the ideas, the sentiments diffused in the social environment, which may be comprehended and summed up in the man of genius, realised and then manifested in the highest manner, so that he may be a representative of his time and of the society in which he lives. Concerning the first fact, I may refer to the opinion of a man who has studied with every means of observing the conditions of superior men, namely, Galton, who believes that social obstacles constitute a system of natural selection in the depression of those whose intellectual qualities fall below a certain level, but which could never act so powerfully on the man of genius. Even if the obstacles to his success were very great, we should expect that the genius would overcome them. He writes, "If a man of genius is gifted with vast intellectual ability, with eagerness to work and power of working,

I cannot comprehend how such a man should be repressed. . . . I am speaking of the very first class men—prodigies—one in a million or one in ten millions."[1] Notice closely what Galton means to say. Speaking of eminent men, men worthy to be considered geniuses, he writes: "I do not mean high social or official positions, nor such as is implied by being a mere lion of a London season; but I speak of the reputation of a leader of opinion, of an originator, of a man to whom the world deliberately acknowledges itself largely indebted."[2] Hence all those who acquire power or reputation from social position and intrigue are excluded, and this is natural. To these eminent human beings, as Galton denominates men of genius, he attributes a very high personal value, by means of which they necessarily overcome every difficulty and rise. By his victory over obstacles may be recognised, according to Galton, the truly superior man. He adds that "if the hindrances of the rise of genius were removed from English society as completely as they have been removed from that of America, we (that is, the English) should not become materially richer in highly eminent men."[3] That is to say that genius must be sought in the personality, in the characteristics, of the man who is endowed with it, and not in society. This appears to me to be right.

But in regard to the second fact, there may be some reason in the contention of those who claim that genius is a sociological phenomenon. This is put forward, however, in an absurd and inexact manner. I should like to know how much influence was felt by Newton in his discovery of the law of universal gravitation; how much Humboldt was influenced in his profound studies, or Lagrange, or Galileo, or finally Copernicus, whose discoveries were foreign to the intellectual movement of his time, or directly opposed to it. These men worked apart from the social movement. Think of Alexander von Humboldt shut up in his observatory at Paris, scanning the heavens day and night while the famous days of '92 were passing. Copernicus wrote a book upon the movement of the earth, and prayed that he might not be roasted for contradicting

[1] *Hereditary Genius*. P. 35. [2] *Op. cit.*, p. 33. [3] *Op. cit.*, p. 36.

the Catholic Church, and that he might not fall into the hands of the Inquisition. And Galileo, brought before the Inquisition at Rome, was compelled to deny the truth. These were men who gave a new intellectual direction to the social world, and they did not receive it nor were they greatly influenced by it. Nor is it worth while to say that if Copernicus and Galileo had been born among the Indians of America they would never have discovered anything, for there is no sense in such a statement. If one were born in the midst of a people entirely illiterate, one of course would not be able to write.

There would be much to discuss in regard to the case of Charles Darwin, because the evolutionary hypothesis had already been presented by his uncle Erasmus Darwin and by Lamarck and by the brothers Saint-Hilaire and by others. But sociologically considered the doctrine was in opposition to the dominant ideas of the time, and was considered incredible. That is to say science has its heredity, and hence its affiliation, living apart from ideas dominant in the sociological moment until the time arrives in which it may impose itself and become universal. Science never receives an influx from the masses, but it is science on the contrary which reveals itself and struggles for existence by diffusing itself. And it is science which forms social opinions, thanks to the powerful impulses of men of genius like Darwin.

But it may be said that this is not the case with art. I will say, however, that not even in the case of art may it be affirmed that genius depends upon social influence. I would mention Wagner as an evident example in music. I do not know whether Wagnerian art will ever become general, but I do know that it arose against the common tendencies, and not from a sociological influx. I know also, that some have attempted to imitate it, not wholly but in part, and these imitators are those who felt the influx, not social however, but that of the man of genius, who is precisely one of those who has arisen in accordance with the idea of Galton. I am almost tempted to say that those who sum up and assimilate the ideas and sentiments common to the social collectivity, and make themselves representative men, either in letters or in the arts, are

not men of genius, in spite of the fact that they are eminent, and representative of culture in their age. Because they do not create anything; they do not solve the enigmas of science nor open new paths, intellectual or artistic. He who represents existing culture is a great centre of suggestion, that is to say, he sums it up in a lofty and superior manner, but he is not a genius.

I speak of social influence as I understand it. In the same epoch there may be intellectual, artistic, literary, or biological needs not satisfied, secular problems not solved. Now there comes one who satisfies the first, solves the second and impresses new characteristics upon science and art. This is the man of genius who feels and recognises the desires of society, but has not undergone social influence in the ordinary and common acceptation of the term. Finally let us remember when we are treating of superior men, men who have a conspicuous personality, that men generally assimilate what may be absorbed by their individual organism. Those who do not have this personality, and they are the majority, are subject without choice to every suggestion. Hence it happens that men of genius, who are eminent personalities, are subject less than all others to social influences, and those which are felt by them are homogeneous to their personal conditions. Such a person does not become a pessimist from the reading of a book, or because there is a pessimism in literature. Schopenhauer always taught that his melancholy was congenital. Nor does he become a mystic if he has not within himself a tendency to mysticism. If the great masses of men become mystics and pessimists through unconscious influence, it is because man is a gregarious animal and hence subject to suggestion, and to act under the influence of social ideas and sentiments. The man of genius lives outside of this gregarious union in which suggestion plays so great a part, and is therefore solitary, or in opposition to the social current. He is a great eccentric.

G. Sergi.

Rome, Italy.

A DECADE OF PHILOSOPHY IN FRANCE.

IN the course of the past ten years I have presented to the readers of *The Monist* the personalities and the works of a large number of writers, attempting so far as possible to compare their teachings with one another and to assign them their place in the general movement of modern thought. To-day it seems to me desirable to take a general view of this period and to devote some pages to a summary of the observations which it may yield. The necessity of an occasional inventory is forced upon us by the number of books which from month to month accumulate upon the shelves of our libraries.

I. WHAT IS PHILOSOPHY?

This is a question which has been asked more than once, and which inexperienced readers will doubtless be surprised to hear formulated by professional philosophers: What is philosophy?

From that vast group of studies which was formerly called philosophy, psychology and sociology have been separated and made to form independent branches. Moreover, these in their turn, having recourse to the experiments of the laboratory or encouraging comparative researches in history, have finally absorbed æsthetics and moral philosophy—I had almost said logic and the theory of knowledge, for one thing involves another, and the study of the human mind, considered from the point of view of its faculties as well as of its products, could not be separated either from psychology, which studies the individual consciousness and seeks its roots in the physiological sub-soil, or from sociology, which points out

the mutual relations of individual consciousnesses and the effect which they exercise upon one another.

While these studies, be they general or special, overlap one another in many points to such an extent that their boundaries are sometimes indeterminate, nevertheless they form groups which are quite distinct, and one does not see clearly at the first glance what is left peculiar to philosophy in the ancient sense that would not at the same time belong to some special science.

But, it might be said, after all philosophy is the whole series of these studies, understood in a different way and generalised. Such a definition would be too loose, in my opinion, and at the same time not sufficiently comprehensive. Then we must go farther and declare boldly that philosophy includes also the natural sciences, astronomy, physics, chemistry, and biology. But how does it include them? How is it the whole of knowledge without being any special branch of knowledge? My reply to this question will be very simple. Philosophy applies to all branches of science because it is a function of the mind; it embraces the whole of science, because it is a manner of conceiving the universe.

We may distinguish in science two sorts of results. These are: first, empirical laws, in which we have the most precise expression possible of reality; second, rational hypotheses, by means of which we succeed in grouping a great number of facts, or series of facts, under a clear and precise formula.

Such are, for example, in the subject of light, the laws of reflexion, refraction, etc., on the one hand, and on the other, the hypothesis of emission, replaced later by that of undulations. Thus every expression which goes beyond the empirical has something of a conjectural character. Conjecture and philosophy are intimately connected. The proof of this proposition is so clear that I will not insist on giving it, and the bearing of it will be seen presently.

The human mind is constantly endeavoring to overstep the limits of immediate observation. It is by virtue of this fact that science is at the same time philosophy; it is for this same reason that philosophy may be considered as a primary function of the intellect, and that it signifies in a certain degree our very effort after

abstract generalisation, which is the means and the object of all knowledge.

But what is generalising but concentrating within the scope of the mind the multitude of facts which experience would meet dispersed and fragmentary, grasping them in their connexions and expressing them so far as possible in terms of one another? And what, in sum, is such a labor of mental concentration but conceiving the universe?

Singular as this definition may appear, in form at least, to some readers, I fancy that the majority of our philosophers, M. Ribot, M. Fouillée, M. de Roberty, for instance, would not object to it. Those who, with M. Paul Janet, wish to identify philosophy with the science of thought, "the thought of thought," are perhaps less concerned with defining philosophy than with identifying it with the spiritualism which they themselves profess.

But without further delay let us proceed to the examination of the French works which constitute the object of this article, beginning with sociology.

II. SOCIOLOGY.

The field of sociology includes works of very varied character and treating vastly different subjects. And they differ not simply in character, but also in their method, in the conception which their authors have of a science of society, and even of the social fact itself, which after all is the very object of their study.

Thus, on the one hand, we have seen a long debate conducted upon the more or less close similarity of society to living organisms, an ancient analogy by means of which we attain the desirable end of connecting sociology with biology, and which suggests points of just approach, but which cannot take the place of the explanation which it promises.

On the other hand, we have seen philosophers like M. Tarde, in this respect following Taine, demanding the explanation of the social facts through the analysis of elementary psychological states[1]

[1] The action of one individual upon another, or even the inner struggle within one and the same person and the adjustment of two ideas in one brain.

into which would be definitively resolved the facts of repetition, opposition and adaptation, which seem to him to dominate all science,—and which amounts very nearly to reducing sociology to psychology,—while again, still others, like M. Durkheim, faithful in this respect to the thought of Comte, regard a society as on the contrary a being *sui generis*, having its own independent structure and its own laws of development.

But enough of these contradictions. They disappear inevitably in the exact comprehension of what may constitute a science of society. And what else is it really that constitutes a science, if not —and it cannot be too often repeated—inquiring how one series of facts differs in function from certain others, and formulating the laws of their variation if it is possible to grasp them? This definition applies to astronomy, to physics, to chemistry, and is equally good for sociology. When we take up this point of view, the factitious obstacles over which we have stumbled quickly disappear.

But what will be the series of facts which we shall have to consider in the case of sociology? In this class of investigations it scarcely makes any difference whether or not one claims to be able to resolve in theory social facts into individual facts. The action of men combined into societies has brought forth results which exist independently when once created, and which in their turn react upon the individual whose psychology they unite in determining. And it is thus that the past exercises an influence upon the present and the future. Religions, laws, and civil or political institutions, the formation of independent associations within society itself, the administration of the soil and of movable property, military power and commercial relations, works of art and products of industry, written languages, acquired habits, are but so many creations of human activity which have tangible form in matter, are incarnated in persons, are transformed or pass into actions. In a word, they are facts, and these facts, which are truly social facts, and not resolvable into individual facts, are so many series of facts which go together and are comparable with one another.

Now if the question is asked which series is the most general, and whether there is not some controlling social fact under which

the others can be ranged, we find that investigations have generally been directed toward this object in the hope of attaining a very desirable simplification of the matter, and this is what characterises the philosophical but at the same time provisional tendency of social science.

Comte, with his law of the "three states," located the generative fact of human history in the evolution of the intelligence,[1] that is to say, in psychology, although he claimed nevertheless to preserve for the social fact an objective and independent character. M. Tarde, with his laws of "imitation," "opposition" and "social logic," also locates the generative fact in psychology; but he deliberately resolves sociology into collective psychology, or individual psychology amplified, or, more exactly, he subordinates the science of society to a view that is purely philosophical, and constructs upon vague analogies a sort of superior sociology. M. Durkheim selects for his explanatory principle the "division of labor," that is to say, a fact of political economy; M. Novicow, "the transformation of the struggle for existence," which means the following out of a biological law into human history.

Interesting as are these general views, or these varieties of reduction of such complex occurrences to a single aspect, they are for all that premature. The task which calls upon us to-day is to study in detail the variations of social facts, be they simultaneous or consecutive. And the only example of such a study which I find in our sociological literature is the truly remarkable work, which may pass as a model, in which M. Durkheim has undertaken to investigate the causes of the change in the proportion of suicides in different societies and in different stages of social life, how, in other words, it depends upon age and sex, upon race and climate, upon celibacy, matrimony or widowhood, upon the institutions of divorce or of indissoluble marriage, upon the religious training, corporate institutions, revolutions, etc.

Every fact, whether more particular or more general, is sus-

[1] M. Strada also has his laws of the "three states," marked by a change in method: fideism, rationalism, impersonalism, which are about equivalent to theology, metaphysics and positivism.

ceptible of a similar treatment. The modifications of his habitat by the labor of man, or of man by his habitat, are a fact; the influence of cross-breeding upon the races, and that of the ethnic element upon the destiny of empires, are likewise facts. And I refer to them here because the special study of them has given rise to those theories known as social geography (of which I find no representative in France, except, perhaps, M. Mougeolle), and anthropo-sociology, with which are associated among us the names of Comte de Gobineau, of M. Durand de Gros, of M. de Lapouge, and of M. Charles Mismer.

As a matter of course, the study of facts of any sort, religious, economic, political, legal, even when it does not expressly attempt a correlation of series and the examination of their comparative variations, constitutes a useful contribution to sociology, and works of this sort have thus far been most numerous. They treat an infinite variety of subjects: the forms of property and of marriage; the manners of primitive communal life; the institutions of guilds and commercial relations; the relation of criminality and alcoholism, etc., etc. I shall cite no names. I restrict myself to pointing out the direction which studies seem to me likely to take henceforth, and the conception which is getting itself accepted of true sociology and of good method in sociology.[1] The period of dogmatism and *à priori* generalisation is past. The period of analysis is commencing. But if the works which are being presented have the aspect of dispersion and disorder, nevertheless they are being prepared with a view to making possible the synthesis which will be the work of the generations to come.

The recent establishment of the *Année sociologique* (1898), published under the direction of M. Durkheim, will aid powerfully toward this result. The readers of this journal will in fact find analyses of all the articles and reviews appearing in France and

[1] Among the authors of general works not hitherto mentioned it seems proper to enumerate: MM. de Greef, De Roberty, Ad. Coste, J. Pioger, L. Lacombe, R. Worms, A. Espinas, G. Richard, G. Le Bon,—M. Espinas because of his studies in technology; M. Coste for his *Principes de sociologie objective*, a work which has just appeared, and in which he combats vigorously subjective, psychological sociology.

abroad that concern sociology,—analyses which are classified under special titles so as to constitute by their very grouping coherent studies.

III. PSYCHOLOGY.

1. General Psychology.

Psychology now occupies so many writers and puts forth so many works that it would be impossible in a few pages to outline the questions treated or even to emphasise the results attained. The reader will find what he needs by running over the voluminous *Année psychologique*, published since 1895 under the direction of MM. Beaunis and Binet, and will thus acquire some conception of the enormous labor that is going on in every country in the field of physiology and psychology, normal and pathological.

The tendency, here as in sociology, is toward special studies, to monographs, to careful analyses of the facts, whether by means of simple observation or by experiment. From the moment when one claims to devote himself to science, it is a question of bringing together series of facts in order to take note of their variations. In doing this psychologists proceed in various ways: by noting the physiological modifications which correspond to psychic operations or accompany given states of consciousness; by examining and estimating perceptions or sensations, for instance, by the aid of different methods, by comparing the mental processes of one person with another, etc., etc.

France is beginning to contribute a considerable amount to these patient researches. M. Binet and his collaborateurs in the laboratory of the Sorbonne, MM. Philippe, Courtier, Bourdon, and others, have produced works of value, such as the investigations on the circulation in the capillaries of the hand and its connexion with respiration and mental activities; on the delicacy of the musical ear tested by means of the graphic lines of the sounds produced by the piano, etc.[1] Thus far, indeed, French psychology

[1] We should add to these names that of M. Th. Flournoy, director of the laboratory at Geneva, and that of M. Victor Henri, at present a "privat-docent" in Germany.

has been directed toward clinical investigations, and has derived great profit from them.

Definitive theories, it is clear, can be established only on such a basis as this. And yet we cannot deny the value of works of general and analytical psychology, or even of literary psychology, which, after they had for a time enjoyed almost exclusive favor, certain critics are now depreciating. In fact, such works have the advantage of being able to suggest interpretative hypotheses, to group the facts accumulated and the solid demonstrations under clear propositions, or finally, to indicate new problems. It is well, in any case, not to bury oneself in the minute details, and never to lose from view the general outlines of the problems.

I hasten to remark that I am deliberately omitting works of pure physiology, which would require a separate review. They are on the whole foreign to psychology, although they border upon it; they furnish it the means for investigating and testing, and fix its primary conditions, instead of being appointed to solve its special problems. There can be no question of psychology without the intervention of "states of consciousness." One biologist, however, M. Le Dantec, has devoted himself to defining the notions of individuality, of consciousness, of biological determinism, and has thus ranked himself among the psychologists. Under the head of one special subject, that of heredity, which I find myself obliged likewise to omit altogether, although it interests psychology and sociology in the highest degree, I mention merely two works, one that of this same M. LeDantec, the other that of M. A. Sanson, a specialist in zootechnics. This question of heredity, be it said in passing, may be attacked by the processes of observation and experiment, which I regret to see too much neglected, and which might be employed profitably in our laboratories and hospitals.

Among the works on general psychology,—I come to my subject after a short digression,—I shall mention first those of MM. Fouillée and Paulhan, which do not depend upon the experimental method, but have something of a philosophical character. The work of M. Fouillée, particularly interesting in its critical portion presents a general system of interpretation, of which I shall speak

later. In psychology he re-establishes the primacy of the will, of the ego, and refuses to recognise in the consciousness an epiphenomenon. M. Paulhan, for his part, considers the mind as a total of active elements variously co-ordinated, as a system of tendencies forming so many sub-personalities grouped with reference to a de sign,—an acceptable, though still hypothetical, manner of regarding the phenomena of the spirit, and which has several points of contact with the "polyzoism" of M. Durand de Gros.

M. Ribot, who remains the leader of psychological studies in our country, makes the transition, as it were, from the psychology of the laboratory pure and simple to rational psychology. He depends constantly upon the results of physiology, of pathology, as well as of linguistics and literature; but at the same time he devotes himself to grouping the facts according to a theory and as far as possible from some capital point of view. His unvarying method is to pass from the simple and primitive form to the complex and secondary form. Considering on the one hand that the most vital things about a creature are its appetites, desires and tendencies, and on the other, that the tendencies are manifested spontaneously in movements, he has pursued the motor element in all the psychologic states or acts: feelings, attention, imagination, and even concepts, and thus he has built up the "motorial theory," the fortunes of which it is not my province to discuss, but which constitutes the unifying principle of his whole work.

This theory has been criticised by M. Marillier with reference to attention, and on general principles by M. Paul Sollier, who is unwilling to subordinate "sensibility" to "movement." M. Rauh also opposes it, but in this case from the point of view of spiritualism, as a philosopher rather than as a psychologist.

In the chapter on the affective states I scarcely find anybody to mention with M. Ribot, who treats the *Psychology of the Emotions*, except M. Dugas, author of a monograph on *Timidity*,—the work of M. Paulhan on *Affective Phenomena*, that of Beaunis on *Internal Sensations*, and that of Ch. Richet, etc., being older. Under the head of intellectual and voluntary states (psychology of the perceptions, of concepts) along with M. Ribot still (*Evolution of*

General Ideas), there is M. Godfernaux (*Relations of Thought ana Feeling*). But there should be added to these,—and this without mentioning a great number of review-articles,—the works on pathological psychology due to MM. Ch. Féré (*Pathology of the Emotions*), Pierre Janet (*Psychological Automatism*), Tissié (*Dreams*), Sollier (*Disorders of the Memory; Hysteria*, etc.), G. Dumas (*Mental States in Melancholia*), etc.

Under the head of mental states one might add here certain studies on special concepts: Guyau (*The Idea of Time*), Lechalas (*On Space and Time*), Dunan (*On Time*), Couturat (*On Mathematical Infinity*). But here the boundary frequently seems vague between the purely psychological problem and the philosophical doctrine from which the solution proceeds or which it aims to support.

2. *Ethics and Æsthetics.*

When now we approach the field of æsthetics and ethics, which plainly depend on the one hand upon psychology and on the other upon sociology, we shall find here the names of MM. Fouillée, De Roberty, Séailles, Guyau, Arréat, Souriau, Ch. Henry, Griveau, Maurice Pujo, Combarieu, Lacombe, and others. We shall learn that in ethics, on the one hand, the tendency is to abandon the theories founded upon either interest, or upon immediate knowledge of moral principles, or upon a categorical imperative,—that is to say, upon utilitarianism, hedonism, or apriorism,—to take a final stand upon the solid basis of appetites and tendencies, the source of our moral activity being thus restored to our physiological nature, while ethics in its development is identified with the social activity, of which it represents one aspect and follows the variations; that in æsthetics, on the other hand, there is a tolerable agreement in placing the origin of art in the spontaneous exercise of our vital activity (i. e., in play), and that we are coming to search for the reason of the beautiful and the ugly no longer merely in mental and moral conditions, but, going still deeper, in the elementary states of consciousness which accompany sensible perceptions, and in the spontaneous movements which express them, while at the same time we explain the rôle of art and its history by keeping

always in view its superior quality, which is that of being a sociological no less than a biological fact.

Even the history of art or of literature, taken from the psychological point of view, scarcely contains a more marked writer than M. Ch. Letourneau, and we have no works which I can compare with those of MM. Grosse and Groos in Germany, and A. C. Haddon in England, to mention only these three names.

3. *Individual or Special Psychology.*

Individual psychology also has presented important works, and especially in general ethology (the definition and classification of characteristics). It has been rejuvenated and furthered by the successive studies of MM. Bernard Pérez, Ribot, Paulhan, and Fouillée, promptly followed and criticised by M. Malapert. The marked feature of them is that the authors, abandoning the too vague notion of temperament, which, however, they do not neglect, but attempt to make more definite, have gone for their principles of classification to the profounder facts of life (in the case of M. Pérez to the movements which are their outward evidences), and have introduced also the idea of gradual composition (Ribot) or evolution (Fouillée) in the formation of character. M. Paulhan alone seems to have followed rather, in the laws of the combination of character, the application of a psychological theory which is peculiarly his own, but is a matter of dispute.

Collective psychology has been attempted, under the form of the psychology of the professions, by MM. Arréat (*The Painter*), and Dauriac (*The Musician*). M. Binet has outlined the *Psychology of the Great Calculators and Chess-players.* M. Le Bon has contributed a *Psychology of Crowds*; M. Sollier, in the study of defectives, a *Psychology of the Idiot and the Imbecile.* A work of some compass by M. Fouillée, the *Pyschology of the French People* is the only notable production in the line of race-psychology (*Völkerpsychologie*).

In the psychology of the child no one has continued the work of M. Bernard Pérez. The directors of laboratories are now occupied with the work of verification. Among these M. Binet has

already produced contributions of value (see the Table of Contents of the *Revue philosophique*).

This is not the place to speak of pedagogy, in the strict sense, and I shall content myself with mentioning the works of MM. Jules Payot, P. F. Thomas, Queyrat, and Alexis Bertrand, for what they may contain appropriate to the subject.

IV. LOGIC AND HISTORY.

In France little attention is paid to what the Germans call the theory of knowledge. Even logic has not to-day many devotees. For this line of philosophy I shall have to mention only MM. Fonsegrive (*Efficient Causality*), Milhaud (*The Conditions of Logical Certainty*), Brunschwicg (*The Modality of Judgment*), Brochard (*On Error*), Boirac (*The Idea of Phenomenon*), Roisel (*The Idea of Spiritualism*), Bergson (*Data of Consciousness, Matter and Memory.*)[1] To confess the truth, these authors are not all to be classed strictly and to the same extent under the present heading; indeed every essay in philosophy implies some sort of criticism of knowledge, and I do not wish to involve myself here in an anxiously minute classification of books, which would be quite superflous.

For the classification of the sciences I must mention MM. Goblot and Durand de Gros. M. Goblot presents a classification based upon Comte's principle of "decreasing generality and increasing complexity," but with the important modification that he no longer distinguishes closely between abstract science and concrete science, but between the study of general properties (as in physics) and that of concrete species (as in chemistry, which thus no longer occupies the same place as in Comte's system),—these studies together constituting theoretical cosmology, to which there are certain arts corresponding. We meet a similar division in the higher stage of bio-psycho-sociology, with the laws of organic, psychologic and social functions on the one hand, and on the other the applied sciences (anthropology, geography, and history),—hy-

[1] The works of MM. Liard (*The Definitions of Geometry*), Lachelier (*On Inductions*) and Boutroux (*On Contingency*) are only new editions.

giene and therapeutics (including ethics) constituting here the practical sciences, or arts.

The work of M. Durand de Gros, which in my opinion is the most remarkable, and which must be reckoned with henceforth in every attempt at classification, is a criticism of the four possible taxonomic orders: the order of generality, or resemblance, the order of composition, or collectivity, the order of hierarchy, and the order of genealogy and evolution,—these four orders being considered in accordance with the expression which each gives to the facts, and with their relations each to the others.

The general history of philosophy has been enriched by several important works to which are attached the names of MM. Fouillée, Ribot, De Roberty, Picavet, and Ch. Adam. A large number of monographs or special studies are to be noted, among them those by MM. Bénard (*Aristotle's Aesthetics*), Ch. Adam (*Bacon*), Brunschwicg (*Spinoza*), Delbos (*Spinoza*), G. Lyon (*Hobbes*), Cresson (*Kant*), Lévy-Bruhl (*Jacobi*), Paulhan (*De Maistre*), Paul Janet (*Lamennais*), Bertrand (*Maine de Biran*), Lichtenberger (*Nietzsche*), Raoul Allier (*Renan*), and Séailles (*Renan*). To these are to be added the historical studies of MM. Renouvier, Pillon, and Dauriac, in the *Année philosophique*, and such studies as for instance that of M. Dumas on the mental state of Auguste Comte, in the *Revue philosophique*.

Some of these works aim chiefly at bringing into relief a doctrine held or taught by the authors. I shall attempt to indicate in a few lines the character of the schools and the dominant tendency of the thought.

V. DOCTRINES.

If we propose to place the works on philosophy and religious criticism in a distinct group, we shall find in this group Catholics, Protestants, and simple philosophers. The latter, such as MM. Guyau, Izoulet, Strada and Arréat, abandon altogether the tradition of revelation and devote themselves to defining a positive conception of life and the world which might be substituted for the old theologies; they belong therefore to whatever philosophical

school may be, but with this important reservation, that they are committed in favor of the value of emotion and of the practical efficacy of their philosophy.

The Protestant writers do not give up the Christian tradition; but, with more or less freedom, they interpret it, correct it, and vindicate it. Such are: MM. E. Naville, Ch. Secrétan and A. Sabatier.

As for the pure Catholics, to whom fundamental criticism is as good as forbidden, they naturally form, considered as philosophers, the group of Christian spiritualists. Such are: the abbés De Broglie, Maurice de Baets, and C. Piat; furthermore, MM. Fonsegrive and Blondel. Our Protestants, indeed, are also Christian spiritualists; but M. Sabatier may be classed among the liberal spiritualists. This group has hitherto been the most numerous, but the majority of the philosophers who still adhere to it have, as we shall see, added to their spiritualism modifications which make of it a particular variety of monism.

M. Paul Janet, it is true, has remained a dualist. I might also mention M. Cros, whose realist and substantialist metaphysics admits, along with real entities, which are "forces" and "masses," spiritual entities, or "souls" of organic beings; perhaps also M. Gourd, who arrives at the divine reality by means of "religious dialectics." But for all that the abandonment of ancient dualism in the hope of reducing all things to a unity of principle is a characteristic trait of modern thought. However, the ancient modes of thought are met again to some extent in the monistic theories of to-day, and the monism wears to us a different aspect according as it places its object in the absolute, as it seeks it in the substance, in the phenomenon, or in the idea, or as it reduces it to a logical expression. I hasten to say that I do not attribute any exaggerated value to this distribution into definite schools, to which certain systems of philosophy are not exactly adapted, for the simple reason that there are no two minds in the world fashioned exactly alike; I use it here only to give some little order to this review.

First, then, I distinguish a transcendental monism, which in the absolute reconciles the contradictions of human knowledge, and

blends all transient existences in the Being-in-itself, which is without form or possible attributes. M. Bergson discovers this absolute in the sentiment of liberty; M. Récéjac reaches it by means of the "mystic consciousness," which is likewise an act of liberty; M. Strada rises to it by the analysis of the antinomies.

Spiritualistic, or substantialistic, monism is represented by M. Alaux. This philosopher brings matter back to dynamic elements, to forces which meet in a single central force; he defines God as "the power of Being," which is eternally realising itself, and which realises other secondary powers, which are the *beings*. I will mention further M. Thouverez, who proclaims the harmony of world and of spirit, and seeks in God the guaranty of rational laws,—the reality of God being for him the great miracle of the world, which man cannot comprehend,—M. Gory, and others. This last mentioned manner of looking at things is rather hard to distinguish, in fact, from genuine dualism, which accepts the two worlds, of matter and of spirit, but not without subordinating the one to the other as its cause and governor. I would say the same of the rejuvenated dualism of M. Ribert, who conceives the universe as the fruit of the intimate and indissoluble union of "the infinite virtuality," which is everywhere present, with the innumerable multitude of material elements which are distributed throughout space.

Materialistic, or phenomenistic, monism is professed explicitly by MM. Jules Soury, Letourneau, Pioger, and Lafitte (along with the orthodox Positivists); and practically by M. Ribot. This is monism in the sense that the phenomenon, or the relation of phenomena, is the sole reality considered, and that the state of consciousness (the subjective fact) is connected with the physiological state (the objective fact) as an epiphenomenon; it is agnosticism also, in the sense that every explanation which would reach beyond the phenomenon that can be grasped at first hand is ignored or neglected, or at least that it is denied evidential value. Yet it would be an error always to confound phenomenism with ancient materialism; M. Ribot, for instance, if I am not mistaken, frankly accepts the psychic fact as it seems to be presented to him in the

present reality, without any prejudice against the "possibilities" which others may be pleased to reserve.

Idealistic monism presents itself under two aspects: critical formalism, as represented by MM. Renouvier and Pillon and the neo-criticists; and psychic dynamism, represented by M. Fouillée. The feature that is common to them is their reduction of the physical to the psychic, of matter to idea,—wherein these systems differ openly from phenomenism or materialism. But they differ from each other in the different significance that they give to the psychic fact; here logical category, there "*idée-force.*" To M. Fouillée the mental is indeed the true content of reality, while matter is only its form; however, he further distinguishes mechanism from psychism and maintains the realism of the natural sciences. M. Pillon does not accept this situation, which seems to him to be contradictory; he reduces our concepts of matter, of substance, of infinite quantity, of space, to "forms" of our sensibility and of our imagination, and always subordinates mechanical synthesis, which is that of science, to "idealistic" synthesis, "the only real one," which is that of philosophy. In fine, neo-criticism ends in a theistic monism; M. Fouillée in a pantheistic monism.

Logical monism, sustained by M. de Roberty, does not aim to gather together the multiplicity of phenomena into the assumed unity of matter, of life, or of mind; it stands "for a state of the scientific consciousness which unites the scattered elements of individual knowledge into a comprehensive and intelligible whole," —a synthesis which is always in process of becoming, and so is provisional and uncertain. This monism claims to be, and after all is, a conception of the world,—the whole world: life, mind, society,—a "bio-psycho-sociologic" conception. It is idealistic in so far as the antinomic concepts: the infinite, the absolute, etc., figure as simple logical positions in this system; but nevertheless realistic and phenomenistic because it does not after all transfer the sole reality to the forms of the understanding or to the states of consciousness.

VI. THE AVERAGE DIRECTION OF THE SCHOOLS.

Now if the question is asked in a definite way how these doctrines understand the conditions of knowledge, it will suffice to call attention to the fact that they are necessarily divided among these three positions: transcendental knowledge, subjective knowledge, and simple realism.

To transcendent and spiritualistic monism there is no knowledge save of the absolute, the sole guaranty of rational laws, the eternal essence which is the support of particular and individual things. To idealistic monism the only knowledge is that of the subjective fact, be it "appetite," "idea," or "category." Phenomenistic monism and logical monism would think just the opposite, even to the point of translating the subjective into the objective: but conscious now of its character and its necessity. Logical monism especially does not concede the irreducibility of the ego and the non-ego, upon which are founded alike spiritualism and materialism in the strict sense; it is idealism merely in this sense, and not in the way of critical formalism, which regards the exterior world as a simple product of the mind.

To tell the truth this critical formalism has had its day, as well as dualism, although our neo-criticists have abandoned the extreme consequences of idealism, and done their best to fortify their new positions. There remains to consider, if I am not mistaken, only psychic dynamism, on the one hand, that is to say, the remodelled form of idealistic monism, and on the other, phenomenism and logical monism. Now, opposite as these systems are in their definitions of the primordial element of things, in their theories of knowledge as well as in their hidden metaphysical postulate, they approach each other to a certain extent in the spirit of their method. At least they both profess the same submission to scientific discipline. Every day the necessity is more sharply felt of building upon acquired knowledge; the conviction is becoming general that philosophy is valid only in proportion as science is valid. Hence the pronounced tendency to submit docilely to the guidance of the

facts; hence also a wise distrust of vast *à priori* constructions, or even of hasty generalisations in which the imagination has been the chief guide. Another equally marked characteristic of current philosophy is the almost general abandonment of the agnostic point of view: it claims anew the freedom to construct leading hypotheses, without concealing their provisional character, and no longer renounces the hope of a general conception which may satisfy the demands of reason while conforming to the teachings of science.

Such a conception, let us repeat in closing, will never be more than the analogue of what is known in scientific language as a rational hypothesis. A system of philosophy means simply a fashion of conceiving the universe. But the fact is, that there is no reflecting man in whose eyes the universe is not painted with certain more or less definite outlines, and therefore there is no thinking man who does not belong to some one of the philosophic types that we have tried to define.

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This rapid review will have demonstrated that French philosophical productivity has been sufficiently rich in these last ten years. The revival begun about thirty years ago has not subsided, and the general intellectual direction has remained recognisably the same.

To-day, however, a tolerably vigorous reaction against the positivist, or experimental, school is discernible. In literature it is manifested under the forms of religiosity and mysticism, in works of a composite and often bizarre character; in philosophy, by the essays in neo-Thomism (D. Mercier, J. Halleux, and others, of the Institute of Louvain[1]), and by the works of certain professors of the new generation, whose periodical organ is the justly valued *Revue de métaphysique et de morale*. Certainly the enlightened criticisms of such writers as MM. Rauh, E. Halévy, and others, will be able to render the service of pledging psychologists to greater

[1].See on this subject the articles on neo-scholasticism by M. Picavet in the *Revue philosophique*.

prudence. The partisans of the theories known as "intellectualism" and "voluntarism" seem to me, however, to have assumed a questionable position in taking exceptions to physiological psychology, the results of which they cannot deny, because of the materialistic solution which these results themselves seem to them to involve. It would be wiser, in my opinion, not to abandon methods of investigation whose efficacy is undeniable, and to stop with making proper reservations with reference to the too general or too absolute consequences which certain systematic minds insist upon with deplorable haste.

I call attention further to the more discreet, and consequently more helpful, use that is being made to-day both of the doctrine of evolution, from which but a short time ago venturesome explanations were asked on all sorts of subjects, and of the phenomena of hypnotism, which had given rise to a superabundant and unsystematic literature. Finally I note the less exclusive favor, as it seems, enjoyed by psychology, which is working out to the benefit of sociology. The latter study is even aspiring to overstep the limits of its natural domain and to supply the centre or the framework of a universal conception (thus MM. Fouillée, De Roberty, and Izoulet),—a condition which involves the danger of confusion, for it is scarcely possible to understand how general biology and metaphysics, for instance, should be parts of sociology, excepting by a very artificial extension of the meaning of the term.

But these are inevitable fluctuations in studies and temporary changes in the respective positions of the schools, which should not hide from us the aspect of the whole. But it was my duty to point them out, and it would also be interesting to estimate the comparative value of philosophic production in different countries. I shall not approach this delicate comparison. The work that is going on in the modern world is a genuine work of collaboration, in which the thing important above all others is the advancement of science, and it is enough for me to have indicated in these pages the honorable part in it which belongs to the philosophers of French tongue.

PARIS. LUCIEN ARRÉAT.

DISCUSSIONS.

THE DOCTRINE OF CONSERVATION OF ENERGY IN ITS RELATION TO THE ELIMINATION OF FORCE AS A FACTOR IN THE COSMOS.

The modern theory of conservation of energy may be said to date from 1842, when Dr. Julius Robert Mayer, of Heilbronn, formally stated that there is a connexion between heat and work, and introduced into the language of physics the expression "mechanical equivalent of heat." The investigations of Joule, Thomson, Rankine, Helmholtz, Clausius, Holtzmann, Clapeyron, and Regnault, may be said to have established the principle, formulated by Prof. James Clerk Maxwell as follows:

"*The total energy of any body or system of bodies is a quantity which can neither be increased nor diminished by any mutual action of those bodies, though it may be transformed into any one of the forms of which energy is susceptible.*"

The doctrine is now generally regarded, among mathematicians and physicists, as established beyond the possibility of being overturned. Granting its truth as stated, it assumes several fundamental notions as axioms or postulates upon which to base the deduction. They are as follows:

1. Space, or extension in three dimensions.
2. Time, or duration.
3. Matter, with the property of being increate and indestructible.
4. Motion, or translation in space.
5. Force, that which opposes or tends to produce motion in matter,—which may produce motion in matter or merely stress, a tendency to motion.
6. Mass,[1] or inertia, that property of matter by which it resists the action of a

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[1] This sense of the term "mass" is that in which it is used by Professor Maxwell, who has done as much, if not more, than any other writer, to give us a rational working theory of molecular statics and dynamics,—one which avoids the necessity of assuming action at a distance. The common understanding of "mass" is the "amount of matter." But the amount of matter is always in direct ratio of inertia; so the common notion may be considered as included under the more comprehensive notion of Mr. Maxwell.

force,—such resistance as requires time for the production or destruction of motion in matter.

Space and time are generally regarded as fundamental notions in the nature of intuitions and requiring no explanation. The indestructibility of matter and the correlative proposition that matter cannot be created are now also generally conceded, though not axiomatic or susceptible of proof, except by limited experimentation. Investigation has been sufficiently extensive, however, to establish the indestructibility of matter as far as human powers and observation of natural forces go. Motion is a postulate which no one denies, except those idealists who deny the credibility of the senses. Inertia, or mass, is generally assumed as a property of matter requiring no proof or explanation, except that through the media of the senses by experimentation. However, Prof. James Clerk Maxwell says on this point;

"But one of the first, if not the very first, desideratum in a complete theory of matter is to explain—first, mass; and second, gravitation. To explain mass may seem an absurd achievement. We generally suppose that it is the essence of matter to be the receptacle of momentum and energy, and even Thomson, in his definition of his primitive fluid, attributes to it the possession of mass. But according to Thomson, though the primitive fluid is the only true matter, yet that which we call matter is not the primitive fluid itself, but a mode of motion of that primitive fluid. It is the mode of motion which constitutes the vortex rings, and which furnishes us with examples of that permanence and continuity of existence which we are accustomed to attribute to matter itself. The primitive fluid, the only true matter, eludes our perceptions when it is not endued with the mode of motion which converts certain portions of it into vortex rings, and thus renders it molecular.

"In Thomson's theory, therefore, the mass of bodies requires explanation. We have to explain the inertia of what is only a mode of motion, and inertia is a property of matter, not modes of motion."

Professor Maxwell goes farther to point out the difficulties encountered by Sir William Thomson's Vortex Ring Theory of the constitution of matter; but he insists, as is seen from the above quotation, on the necessity of explaining mass and gravitation, as a requirement of a complete theory of matter. The assumption, therefore, that inertia is a property of matter requiring no explanation, is without warrant. While inertia is a property determined by experiment, it is doubtless a complex phenomenon requiring analysis; and as such it affords a lurking-place for much that is erroneous,—in a manner similar to the phenomenon of heat, which gave rise to the old, crude notion of phlogiston.

Finally, by a large class of mathematicians and physicists, force has been relegated to the shades of the antiquated, obsolete, to the realm of the unnecessary; or, as Herbert Spencer would say, perhaps, must be regarded as a pseud-idea.

Now, whether inertia and force are distinct from each other, or whether inertia be a phenomenon resulting from the action of force upon matter, the present state of knowledge will allow the expression of an opinion only. But a large number of

physicists have claimed to account for all phenomena by the assumption of matter, ether, and motion, together with the absolute notions of space and time, as the only assumptions necessary. And the two notions which "cover a multitude of sins" in their philosophy are "inertia" and "potential energy."

Prof. P. G. Tait says in his article on "Mechanics" in the *Encyclopædia Britannica:*

"Now it is impossible to conceive of a truly dormant form of energy whose magnitude should depend in any way on the unit of time; and we are therefore forced to the conclusion that potential energy, like kinetic energy, depends (in some yet unexplained, or rather unimagined, way) upon motion;" also, "The conclusion which appears inevitable is that whatever matter may be, the other reality in the physical universe which is never found unassociated with matter depends in all its widely varied forms upon motion of matter."

This is quoted approvingly by Prof. A. E. Dolbear in his *Matter, Ether, and Motion*. I do not find, however, that Professor Tait's co-laborer, Sir William Thomson (from an examination of their treatise on natural philosophy), has fallen into this error, so obvious when we consider the mathematical principles involved. Since the demonstration of the impossibility of such a position is so simple, it is the more surprising that so eminent a mathematician as Professor Tait should make this error. And since the same error has been made by various contributors to *The Monist*, some even assuming the conclusion of Professor Tait as an established principle of science, I will here present a brief discussion of the mathematical principles involved.

Assume the well-known formulæ (1) $M=mv$, and (2) $E=\frac{1}{2}mv^2$; in which m is the mass of matter (in the ordinary sense of the amount of matter), v its velocity of motion in any time unit, and M the momentum, or amount of motion; also E, the total energy of the body.

If we assume in (1) m a constant quantity, then M varies directly with v; in (2) the same assumption will show that E varies as v^2. Again, if we assume E constant (in accordance with the principle of conservation), then v^2, and consequently v, must be constant. That is, if there be a conservation of energy, there must be a conservation of motion. This, indeed, seems to be the contention of Prof. A. E. Dolbear as to motion in the universe.

Again, apply the same formulæ to a system of two non-elastic bodies before and after collision, assuming, for simplicity, all motion in one direction: (3) $M=mv+m'v'$, before collision, and (4) $M=\frac{1}{2}(m+m')(v+v')$, after collision; also (5) $E=\frac{1}{2}mv^2+\frac{1}{2}m'v'^2$, before collision, and (6) $E'=\frac{1}{2}(m+m')\frac{(v+v')^2}{4}$, after collision. Formulæ (3) and (4) are in accordance with the well-known principle that the momentum of the combined mass of two inelastic bodies is the same after collision as the sum of their momenta before collision; thus no motion is lost in collision. But from formulæ (5) and (6) we see that E and E' must in general be different in magnitude, and $E>E'$; that is, by collision some energy has dis-

appeared. We also discover that the greatest disappearance of energy takes place when v is at a maximum and v' infinitely small, or when the body m is at rest. It is explained that the energy which has apparently disappeared has become potential by a change in the configuration of the system,—has done the work of changing the form of the bodies. But there is the same momentum after collision as before; there has been no loss of motion; it has been conserved in the system. Therefore, if potential energy be dependent on motion, whence the motion represented by the energy which has disappeared and become potential? This energy is represented by no motion whatever.

Again, if we assume two bodies moving toward each other in opposite directions, or any system of bodies colliding with directions of motion in any and all angles in space, there is a disappearance of both energy and motion. Such a system is resolvable into several, each system of two or more bodies having a common point of collision. We need, therefore, only to consider the case of a system of several bodies colliding in a common point to make the proposition general.

Let us assume, $mv\cos\phi + m'v'\cos\phi' + m''v''\cos\phi''$ etc.$=M'$, in which ϕ, ϕ', ϕ'' represent, respectively, the angles which the lines of motion of the various bodies make with a directrix coincident with the resultant of M'. If $M'=0$, then all motion and energy disappear. But if we assume the amount of motion in such a system to be a fixed quantity, then the energy of the system before collision will be at a minimum when $v=v'=v''$, etc.; and it will be at a maximum when there is a variation in the masses of the bodies and their velocities and when the smallest bodies have the highest velocity compatible with other conditions assumed. But when $v=v'=v''$, etc., collision causes a disappearance of a certain amount of motion and a certain amount of energy; and in any other case, that is, when v, v', and v'' are not equal, collision causes the disappearance of the same amount of motion as in the preceding case, but a greater amount of energy. Again, if M' in the equation assumed be not equal to zero, but be assumed constant, it is still obvious, if we assume the amount of motion in the system before collision to be constant, that the disappearance of motion on collision, when v, v', v', are caused to vary, is not attended by the disappearance of the same amount of energy.

It must appear, therefore, generally, from what precedes, that the amount of energy of a system may be increased or diminished by a mere change in configuration, the motion in the system remaining unchanged; and it is evident that this conclusion is inconsistent with the proposition that the energy which appears and disappears (the potential energy) is dependent upon motion. And we conclude, therefore, that, in a system of inelastic bodies, energy and motion cannot both be conserved; if energy be conserved, then motion cannot be. But if motion be not conserved and energy is, then some energy (potential energy) cannot be dependent on motion. It must also appear from the above given formulæ, that in any system where there is a change in the rate of motion, energy and motion cannot both be conserved; and if not both conserved, energy must pass from the kinetic state

potential, or *vice versa*, independently of motion. If motion of particles having high velocity be communicated to particles having a lower, energy becomes potential (is apparently lost) without the loss of motion. Or, if by any means the motion of particles having a low velocity could be communicated to particles having a higher, kinetic energy would appear without any change in the amount of motion, —would be represented by no motion.

Again, assume a system of perfectly elastic bodies, or infinitesimal particles, represented by the formulæ: $M = mv + m'v' + m''v''$, etc., and $E = \frac{1}{2}(mv^2 + m'v'^2 + m''v''^2 + \ldots)$. Now in this problem the only case in which E and M are both conserved is that in which v, v', v'', etc., are constant. In this case there is a conservation of energy and of motion, and all energy is kinetic. But this condition could be fulfilled only in case the bodies were perfectly elastic and rebounds instantaneous. The latter condition is physically impossible; since in impact of two bodies some time must be required for compression, or distortion of form, and during which time the particles lose their motion and regain it. During impact there must be a change in the rate of motion; a loss of motion in such particles and a change of energy from kinetic to potential. In a gas the number of collisions occurring in a unit of time will be uniform, under the same conditions of mass, density, and temperature, and the proportion of kinetic to potential energy will be uniform. A gas, therefore, appears to be a system in which both energy and motion are conserved, since the molecules rebound after collision with the same velocity as that with which they approach. This, however, is apparent only; since at each collision there must be a variation in the velocity of the particles, and the moment a variation in velocity is introduced into the system motion and energy cannot appear and disappear proportionally and concomitantly. The same must hold true if the motion become vibratory, oscillatory, or rotary; since the velocity of any particle or part of any particle must then become variable. The only possible case in which a system of bodies can become conservative, both in energy and motion, is that in which every atom of matter and every material point of an atom, if we conceive an atom as made up of parts, shall have forever the same velocity it now has.

From the foregoing discussion it must appear that potential energy can be in no way dependent on motion; indeed, that this is true must be obvious from formulæ (1) and (2), and I have run the risk, in this discussion, of being criticised for attempting to prove what is evident, if we grant the truth of the formulæ. It is also evident, from the same formulæ, that kinetic energy is not wholly dependent on matter and motion; for, if the mass remain the same and be taken at unity, the energy will vary as the square of the amount of motion, whereas it should vary as the amount of motion, under the hypothesis that energy depend on the amount of matter and on motion as the only factors entering it. But if energy be not entirely dependent on motion and the amount of matter in the system, then it must, in part at least, be dependent on some factor not taken into consideration in the problem.

Such factor or factors must be force, or inertia, or both; for there are no other factors adequate to the results observed.

Many inconsistencies would be avoided if writers on philosophic subjects would keep in view the elementary principles of mathematics, pure and applied, especially when discussing propositions which must have their foundations in mathematical principles. I cannot forbear criticising briefly, in this connexion, the article on "Vitalism," by Prof. C. Lloyd Morgan, which appeared in the January number of *The Monist*, and in which the writer was led into several absurdities. Two quotations only can be considered in this article. He says:

"Prof. Burdon Sanderson wrote: 'The proof of the non-existence of a special "vital force" lies in the demonstration of the adequacy of the known sources of energy in the organism to account for the actual day by day expenditure of heat and work.' But an answer in due course came from the vitalists. It was pointed out that the application of a force to a moving body at right angles to its course alters the direction of motion without affecting its amount. The energy remains unchanged. Of such a directive character, it is sometimes urged, may be the application of vital force without presenting any phenomena contradictory of the generalisation that, in the operations of nature, energy is nowhere either destroyed or created."

Now the vitalists to whom Professor Morgan refers were ignorant of mechanics or he has misquoted them; and in either case he seems not to have discovered, for some reason, the mathematical absurdity involved. Suppose a material point to move along the line PA with a velocity a; then suppose at the point of application P a force be impressed on the point sufficient to give it a velocity b in the direction PR, at right angles to the motion in PA. Then the resultant motion will be in the direction PR with a velocity r, in magnitude $\sqrt{a^2+b^2}$; and if the mass be m, the energy will be $\frac{1}{2}m(a^2+b^2)$, instead of $\frac{1}{2}ma^2$, as before the force was impressed upon it.

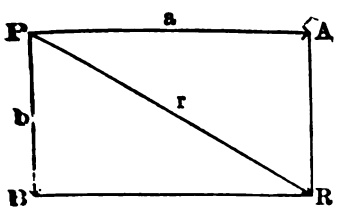

Fig. 1.

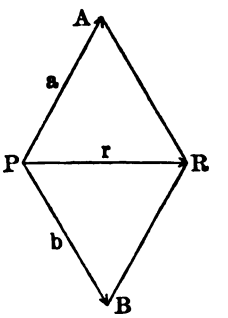

Fig. 2.

It will be observed that the resultant energy cannot be the same as before the force was impressed, except in case $b=0$, or that the force impressing the motion in PR be zero. In case $a=b=1$ and $m=1$, then the energy before the impression of the force will be $\frac{1}{2}$, while the energy of the resultant in AR will be 1. If

however, we assume that $a = b$ and that the angle between their lines of direction be 120°, then $a = b = r$, and the motion and energy remain unchanged. But it is evident that r may have any value between the limits of zero and $a + b$, dependent on the variation of the angle between the lines of direction, PA and PB. And further, if we assume $a = r$, there is still an infinite number of values of b as de-

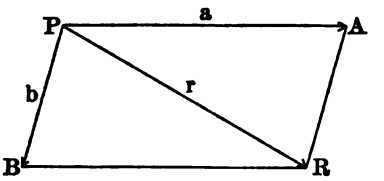

Fig. 3.

termined by the angle APB, which will satisfy the condition that the motion of the material point and its energy shall be the same in magnitude after the impression of the force as before. It thus appears that the application of a force to a moving material point may leave its motion and energy unchanged, may increase the energy and motion, or may diminish them. This is a truth inconsistent with the conservation of an energy dependent on motion, though not inconsistent with the conservation of an energy reciprocally dependent on motion and force,—that is, partially dependent on motion and partially dependent on force, in such a manner that the sum of the two parts in any material system is a constant quantity.

Professor Morgan continues:

"So long as the metaphysical conceptions of force are carelessly commingled with the generalisations of dynamics as a science, this line of argument may appear to possess a cogency which is in truth fictitious. But what is the basal law of dynamics? That every movement of a part in any material system and every state of strain therein, has, as its antecedent, the assignable nature and distribution of the constituent parts of the system. This is a generalised statement of dynamic fact which quietly ignores (though it does not deny) the existence of force as the noumenal cause of motion. Granting therefore that a vital force is conceivable which alters the direction of motion without producing any change in the amount of energy, the question still remains: Is the movement so produced in accordance with, or is it contradictory to, the basal law of dynamics," etc.

To some this "basal law of dynamics" may be satisfactory; but to the present writer it seems to assume by its terms the very propositions which it purports to explain. Let us look beneath its verbiage and see just what the "law" is, and how it comports with rationality. "Every movement and every state of strain has as its antecedent (cause) the assignable nature and distribution of the constituent parts of the system." Now what is the first antecedent or cause? "The assignable nature of the constituent parts of system." But what nature will we assign to these constituent parts? First, to explain motion we will assign to the particles of matter "inertia," the power to resist motion when the particle is at rest, and to continue in motion when it is in motion. We will assign gravitative attraction and molec-

ular attractions and repulsions to account for gravitation, chemical affinity, adhesion, cohesion, and all motions (whether molecular or molar) which are the apparent results of such attractions and repulsions. We will assume material bonds, or hooks, to account for quantivalence of chemical atoms and the power to unite in multiple proportions. We will assume elasticity, the power to recover from distortion of form when the particle is subjected to strain. We will finally assign to a particle which is a constituent part of a system the power to act on other particles at a distance; which action most philosophers have considered not only impossible but inconceivable. In a word, we will beg the whole question by assigning just such a nature to the parts of our material system as will give us the results which we observe,—a most glaring case of the *petitio principii*. But this "assignable nature" must be fortified by the "distribution of the constituent parts of the system." That is, if one part is due east of another part, it will cause (be antecedent to) a certain motion or a certain strain (and what is a strain, if neither energy, force, nor motion?). But if one part relative to another be south, or east by south, or south by east, or east by south-southeast, or some one of an infinite number of other directions, then such distribution will cause, or be antecedent to, some other motion or some other strain. Or if one part be at a certain distance from some other part of the system, such distribution will cause, or be antecedent to, a different motion or strain than when the parts are located at other distances. Indeed, when Professor Morgan said (referring to his "basal law of dynamics"), that it "quietly ignores the existence of force," he should have told us what standing his "basal law" has in court that it should not be condemned as a generalised assumption,—one including under it many other assumptions with no *locus standi*.

There is too great a tendency on the part of many writers to assume certain generalised statements of observed phenomena as containing their own sufficient explanation. The law of gravity is a generalisation which nearly all men accept as true; yet it carries no sufficient explanation of the more fundamental propositions in it involved. The doctrine of conservation of energy is a statement of a certain observed uniformity of nature; but it has in itself no adequate explanation of the various more elementary truths involved in it. We are not even able to say what these more elementary truths are.

ITHACA, MICH. CHAS. H. CHASE.

BOOK REVIEWS.

MYTHOLOGIE UND METAPHYSIK. Die Entstehung der Weltanschauungen im griechischen Altertum. By *Wilhelm Bender*. Stuttgart: Fr. Frommann's Verlag (E. Hauff). 1899. Pages, 288.

Prof. Wilhelm Bender, of Bonn, may be remembered by our readers as a theologian of broad calibre who came prominently before the public through his pamphlet, "The Struggle for Salvation,"[1] and incurred at the same time the displeasure of the theological authorities of Prussia. He was obliged to leave the theological faculty and join the philosophical faculty of the University of Bonn who Pagan-like are not pledged to uphold doctrines of a special school or church.

Bender's latest book is entitled, *Mythology and Metaphysic*, and is an investigation of the origin of the world-conceptions of ancient Greece. Bender traces the influence of mythology in the evolution of Greek philosophers, in their theogonic speculations as well as metaphysics. Thus we learn to understand the germs from which the belief in the soul and the hope of a beyond have originated, and how an ascetic supernaturalism is prepared through Plato, leading to the metaphysical dualism of Aristotle and the pantheistic monism of the Stoics; in contrast to which Democritus offers Epicurean materialism. The conclusion of the book is devoted to scepticism and syncretism, renewing the ascetical supernaturalism in those philosophical movements which are called the new Pythagorism and the new Platoism.

The book is historical in its main contents, and we need not add that throughout it is thorough. Professor Bender is a man well equipped with the necessary theological and historical education to deal with the problems, and his work is the more important as it deals with the origin of the philosophical problems that move the world to-day.

If we are allowed to add a critical comment on the book, we might say that we object to Professor Bender's statement that at bottom there are only two world-conceptions,—the anthropocentric and the cosmocentric. We believe that there is a third one which unites both concepts into one, showing man in the relation to the

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[1] An article on the subject appeared in *The Open Court*, Vol. III., p. 1731.

cosmos as an anthropocosmic conception which is the proper combination of the truths of both contrasts.

Professor Bender is too much under the influence of the idea of the insufficiency of philosophy, or rather of metaphysics, and believes that the only way to deal with the problem is the historical method. He rejects the approaching the subject through the positive sciences, because as he says in the preface, page 9, "The positive sciences are never completed, and thus can never give a final result." But while it is true that the positive sciences are never absolutely completed, they are now, and have been in a lesser degree before, relatively completed, and we can after all make statements which are sufficient to build up a unitary world-conception and grasp the whole cosmos in its relation to man, thus affording the possibility of making man understand his place in the world, and the purpose of life. The historical sciences are after all one part only; we may grant they are an indispensable part, but they will not lead to a definite and clear world-conception unless they are complemented by the positive sciences, among which the natural sciences have been best developed at present.

When it had become apparent that Professor Bender had outgrown theology, his influence upon the theological students of Bonn was deliberately destroyed, —a fact which must be regretted. But we may hope that his usefulness has only been turned into other channels, and he may in the long run, when theology catches up with the new thought of the age, be recognised as a foremost German theologian. At present it may be well for philosophy to have its history investigated by a theologian who has a special eye for the theological problems, and will be more apt than a professional philosopher to work out the religious aspect of philosophy. P. C.

NANNA ODER ÜBER DAS SEELENLEBEN DER PFLANZEN. Von *Gustav Theodor Fechner*. Zweite Auflage. Mit einer Einleitung von Kurd Lasswitz. Hamburg und Leipzig: Leopold Voss. 1899. Pages, 300. Price, 6 Mark.

The reputation of Gustav Theodor Fechner is now well established. He is one of the founders of modern psychology, having laid down some fundamental laws of psychophysical parallelism. He was born April 19th, 1801, in Gross-Särchen, the son of a clergyman. He habilitated at the University of Leipsic, in 1823, became professor of physics in 1834, and died November 11th, 1887. It was during the years 1840 to 1848 that he passed through a remarkable crisis. He fell ill, and seemed to have hopelessly lost his sight and the control of his mind, when he recovered unexpectedly in the year 1843. While prior to his illness he had devoted himself to the problem of the soul, his thoughts became more concentrated on the subject after his recovery. His booklet on "Life After Death," which appeared in 1836, under the pseudonym "Dr. Mises," made an attempt to unite the immortality of the soul with the destruction of man's body according to natural laws. He argued that in the same way as the material which constitutes the body

is not lost, but remains part of the entire body of the earth, so the soul-elements (whatever they may be) of every single life may be preserved in a higher psychic unity; and one has only to contemplate the whole of nature as ensouled with a kind of consciousness of its own in order to comprehend this preservation of the individual soul.

Starting from this idea, Fechner began to cherish the notion of a consciousness entering farther into nature than is generally assumed and was thus confronted with the idea of the soul of plants. Having recovered from his illness, the world appeared to him animated with new life; the flowers of the garden seemed to speak to him, and the sunlight from which his eyes had almost been weaned reawakened his sympathy with the external world. In this condition of mind he attacked the problem of the animation of the flora of the earth, and discussed it in a number of chapters on the question of the indispensableness of the nerves, on the character of plants, on the death and the sufferings of plants, their growth, their winding and turning, their irritability, their relation to animals, the unity of their organism, leading up closer and closer to the conception of a plant soul. When the book was finished, he called it "Nanna," which name was suggested to him by a passage in Uhland's work on *Northern Mythology*, Nanna (representing the bud) being the wife of Buldur, the god of light.

Fechner's book *Nanna* although interesting enough, appeared at a time when its main idea was still strange and startling. The greatest botanist of the age, Professor Schleiden, condemned the book as fantastic, and Fechner replied in a special pamphlet called "Professor Schleiden and the Moon."

In the meantime Fechner continued his work. He published a book on philosophy in the year 1851, under the title *Zend Avesta; or on the Things in Heaven and in the Beyond*. He established his principle that everything spiritual is nothing but the self-realisation of the material, and the material is the form in which the internal spiritual phenomena appear to other spiritual bodies; and he proposed the theory that for a thing to become actually conscious a certain degree of intensity must be attained, for which he proposed the term "threshold." The conception of a threshold has become one of the most fertile ideas in psychophysics, presupposing the acceptance of Fechner's main idea as to the parallelism between the spiritual and the material. "It is for this reason," says Kurd Lasswitz, "that *Nanna* is of special importance and interest, as *Nanna* shows the arguments by which Fechner reached his main conclusions concerning the interrelation of soul and body."

The first edition of *Nanna* appeared, as mentioned above, in the year 1848, and the present time seems ripe for a second edition. Kurd Lasswitz, accordingly, has availed himself of this opportunity of republishing the book which is to-day of greater interest and importance than it was at the time of its appearance. The world has been prepared for receiving the broader views concerning the soul-life for which Professor Fechner has laid the foundation, and we only regret that the

book does not include Fechner's reply to Professor Schleiden, which contains many ideas which the reader would like to have embodied in the same volume.

We may add that Leopold Voss, the publisher, has published the book in a most pleasing form, with a colored cover-design showing a butterfly hovering above a lotus. It is to be regretted that (according to the old German fashion, faithfully adhered to by all authors in the fatherland with few laudable exceptions) the index is missing. P. C.

ETHIK UND POLITIK. By *Dr. F. Staudinger*. Berlin: Ferd. Dümmler. 1899. Pages, vi, 162. Price, 2,40 M.

This little book is a cry in the wilderness. Dr. Staudinger, professor in the Gymnasium at Worms, on the Rhine, bases his results upon the maxim of F. A. Lange, who said: "We should see in the socialistic movement, not a danger, but the beginning of salvation from a great danger." Socialism is an ideal to Professor Staudinger, but he cannot join the socialistic party in Germany, because the latter by its inconsistent and imprudent attitude toward the laws and constitution of his country necessarily renders it impossible for him, being in the service of the government, to become a member and identify himself with the party.

Professor Staudinger explains in the first part of the pamphlet the fundamental principles of social ethics; while the second part is devoted to the consideration of the present forms of society. He discusses the present forms of government and other social factors, the State, the power of capital, the profit system, etc., placing in contrast to them the ethical ideals of reform, especially those of the German social democracy. He criticises the faults of social democracy and proposes to have Socialists make their reforms, according to constitutional principles, leading finally to the self government of society through the rational activity of free men, as the final aim of man's moral evolution.

ESTHETOLOGY, OR THE SCIENCE OF ACTIVITIES DESIGNED TO GIVE PLEASURE. By *J. W. Powell*. New York: G. P. Putnam's Sons. 1899. Pages, 40.

This pamphlet, a reprint from the *American Anthropologist*, Vol. I, 1899, is a concise and very intelligible *résumé* of Major Powell's views of the science of esthetics. The readers of his book, *Truth and Error*, will not be astonished to find the method of his five-fold division carried out here in the same way as it is applied to his whole system of thought. But the main thoughts of the author can be presented without alluding to his pentagonal method. He distinguishes between property and quality. Property is objective; quality is subjective. Quality is the mode in which properties of things affect the sensient being. A foot remains a foot. The objective foot measure is a property, but the pane of glass a foot square may be small if we desire it for a show window, or it may be large if we desire to use it in a carriage. Largeness and smallness are qualities.

Taking the enjoyment of tobacco as an instance, Major Powell concludes that

the pleasure derived from usage is artificial, and is developed by experience; "while new pleasures originate, antithetic pains arise by the development of an appetite which, ungratified, is pain." Like facts appear by contemplating the use of intoxicating beverages, by the odors of flowers, etc., etc.

Pleasures are teleologic; that is, they serve to realise ends or aims and are potent motives for human activities. But being qualities, not properties, they are produced by judgment, and thus Major Powell comes to the conclusion that pain, like pleasure, supervenes only on the cognition of such conditions as are deemed either evils or gratifications. Human pain becomes greater with culture. The pains of parturition increase as society becomes more refined. Major Powell goes to the limit of his conclusions by saying that all pains are derivative. "We have no consciousness of pain when that term is strictly used, but we have cognition of pain."

After an explanation of the origin of the arts from games (music, the graphic arts, the drama, romance and poetry), Major Powell concludes: "Pleasures and pains arise from judgments, and do not arise from consciousness but from inference. All of the phenomena of pleasure and pain arise in the mind through the point of view; they are therefore qualities and not properties. All matter is not endowed with mind, but all matter is endowed with consciousness.[1] The relative element is choice, which becomes inference in the formation of judgments. There can be no mind until there are organs of mind. Until this condition arises in the development of animate life there is no mind, but when it does arise this mind makes judgments. As the judgments are inferences only, until they are verified, there is no cognition until there is verification, and the cognition of pleasure or pain is reached only by inference and verification. This is what we have intended to express by saying that pleasure and pain are derivative." P. C.

DIE MENSCHLICHE SITTLICHKEIT ALS SOCIALES ERGEBNIS DER MONISTISCHEN WELTANSCHAUUNG. Von *Dr. Leop. Besser*. Bonn: Carl Georgi. 1899. Pages, x+106.

The author of this pamphlet is an octogenarian who proposes to apply the principles of a monistic world conception to the field of ethics. He takes his standpoint from Kant's maxim "In experience alone is truth" while in agreement with his countryman Friedrich Albert Lange (the well-known author of the *History of Materialism*) he bases his realism upon the doctrines of the English philosophers Hobbes and Hume. (Preface p v). Dr. Besser's mode of treating the problem is not easy for the reader who will sometimes find difficulty in ascertaining the author's exact meaning.

Dr. Besser insists upon the universality of natural law and assails the dualism

[1] We would prefer to substitute "subjectivity." Subjectivity is unconscious in the realm of unorganised nature, but it changes to consciousness by the development of mind, which originates through organisation.

which divides the world into the domain of phenomena and the realm of the Psyche. Having insisted on language as constituting the nature of man's soul (p. 8) and finding in sensation, or the physiological function of sensibility, the common feature of human life (p. 19), Dr. Besser concludes that "*our* organism alone imparts significance to the eternal motion of the world by means of the nervous system which through the formation of sounds and words produces in our language for a time reality and truth. It is *our* body which is the measure of all things." (pp. 29–30). But we must not forget the sociological nature of language and the nature of origin in the course of evolution. "We can only determine the *post hoc*, not the *propter hoc* (p. 33) and can not find any cause of existence outside of space and time." The ethical valuations should not be sought outside but within this world in phenomenal realities. (p. 41). The more supernatural our religion, the less will be its practical actualisation (p. 53). We live either for celestial hopes or devote ourselves to terrestrial duties and to the welfare of the present life (p. 61).

After a discussion of the problem of responsibility (Chapter VI) and the application of ethics to the conditions of daily life (Chapter VII), Dr. Besser urges his readers to overcome the bugbear of the ego and to aspire after a realisation of peace in which all shall be assured the enjoyment of the fruits of their labors (p. 97).

Ten moral maxims (*Lebens-Normen*, p. 98–100) in which the dignity of labor (I) and the importance of education (VI) as the highest duties of parents (IV) for the sake of the preservation of the race (VIII) are insisted upon, together with a few summary remarks as to the relativity of truth (p. 103), the non-existence of a *causa* (p. 104), the nature of freedom and right, and the solidarity of mankind, from the conclusion of the booklet, which is apparently written with the idea of leaving a testament that will embody the gist of the author's philosophy.

PHILOSOPHISCHE SCHRIFTEN. By *Dr. Theodor von Frimmel.* 1. Zur Erkenntnisstheorie. Vienna: Gerold & Co. 1899. Pages, 36.

The author of this little pamphlet characterises his standpoint as neo-materialism. He starts from the thinking ego and its self-observation. He says: "The ego becomes acquainted with its own nature as being something that thinks according to logical rules. Logic is a product of experience, and the normal sequence of events is called causation. In the concatenation of causes and effects the ego finds itself as some material body that has developed since generations, and continues to remain in relation to its surroundings. There is no definite limit between the ego and its surroundings. Time and space, which are probably immediate impressions, are acquired by experience. Both are actually the exponents of the metabolism in our nervous system which becomes conscious. They are a misunderstood form of vital sentiment. If, in contradiction to experience, we assume the ego to be something immaterial, a solution of the epistemological problem at once becomes possible. It is the material ego alone which permits a combination between our own thoughts and the world of concrete realities."

THE PSYCHOLOGY OF REASONING. Based on Experimental Researches in Hypnotism. By *Alfred Binet*. Translated from the recent second French edition by Adam Gowans Whyte, B. Sc. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899. Pages, 193. Price, 75 cents (3s. 6d.).

While the original of this book was written fully a decade ago, and now in its new second edition is substantially unaltered, it forms an exceedingly clear and attractive discussion of the psychology of reasoning, so far as light can be shed on that subject by the theory of images. There are few psychological works that can be read with so little expenditure of effort, and on this ground the book is especially adapted to the general public.

The main thesis of the author is that "reasoning is an organisation of images, determined by the properties of the images themselves, and that the images have merely to be brought together for them to become organised, and that reasoning then follows with the inevitable necessity of a reflex" (mechanical). He begins with perception which is defined to be "the process by which the mind completes, with the accompaniment of images, an impression of the senses." The theory of images is then discussed, in the light of researches in hypnotism, and the visual, auditory, motor, and other types of imagination thoroughly characterised. Reasoning in perception is then considered, as is afterwards the mechanism of reasoning. The author finds that there is "no decided difference between perception and logical reasoning; the two operations are both reasonings, transitions from the known to the unknown. . . . . Perception contains all the essential elements of a peripatetic syllogism. . . . . Perceptive reasoning and logical reasoning imply the same mechanism. . . . . When the premisses of a reasoning are stated, the conclusion results from them with the necessity of a reflex action. In other words, we reason because we have in our brain a machine for reasoning."

In enforcing the preceding thesis the author makes use of the following beautiful comparison of the flowers formed by the frost on the window panes of a room: "Let us thaw them with our breath and then observe the regelation of the liquid "layer. While crystallization is taking place round a first crystal, 'you notice one "feature which is perfectly unalterable, and that is, angular magnitude. The "spiculae branch from the trunk, and from these branches others shoot; but the "angles enclosed by the spiculae are unalterable.' Just as these crystallisations are "produced by the forces inherent in each of the molecules, so reasoning is produced "by the properties inherent in each of the images; just as crystallisation, in its "oddest eccentricities, always observes a certain angular value, so reasoning, true, "false, or insane, always obeys the laws of resemblance and of contiguity."

Dr. Binet concludes the little book with the following words, which clearly characterise the position that he takes: "Images are not by any means dead and "inert things; they have active properties; they attract each other, become con-"nected and fused together. It is wrong to make the image into a photographic

"stereotype, fixed and immutable. It is a living element, something which is born, "something which transforms itself, and which grows like one of our nails or our "hairs. Mental activity results from the activity of images as the life of the hive "results from the life of the bees, or, rather, as the life of an organism results "from the life of its cells."

ROSMINI E SPENCER, STUDIO ESPOSITIVO-CRITICO DI FILOSOFIA MORALE. By *Giovanni Vidari*. Ulrico Hoepli, Milan, 1899. Pages, xvi+297.

This book contains parallel studies of Rosminian and Spencerian ethics. The genesis and the historical development of the respective systems are set forth and the principles of each are subjected to an historico-psychological and theoretical criticism. The author devotes some space to the idea and basis of law, which has of late received so much attention at the hands of Italian writers. The book offers a good opportunity for acquaintance with Rosmini who, though not well known in America, is called by the author "one of our greatest philosophers, certainly the greatest of modern times." In the concluding part of the work the results of the author's investigation are summed up and placed in comparison with some of the more recent ethical doctrines; and there is some attempt to show what, according to the author, should constitute the basis of a science of ethics. The book is the outgrowth of an essay for which the author received a prize in the Ravizza competition in the years 1894 and 1895.

LA PSICOLOGIA CONTEMPORANEA. By *Guido Villa*. Bocca Bros., Turin. 1899 Pages, 660. Price, L. 14.

The author proposes to present an outline of the actual conditions of the study of Sociology in those countries in which it is most highly cultivated, i. e., in Germany, England and the United States. The author frankly admits that Italy itself presents but little and scattered material for his proposed study, as well as for the history of psychology. He proposes, above all, to expound the general principles upon which these methods and results are founded and to point out the way by which these principles have been derived from early philosophic and psychologic ideas. "The present work," he says, "might be called an historico-critical introduction to the study of contemporaneous psychology." The work is written in an unusually entertaining style and is full of information interesting to the layman as well as to the technical student of this branch of science. The author seems to be thoroughly acquainted with the history of psychology, from Plato and Aristotle down through the various English and German schools. Considerable credit is bestowed upon American contributions to the science. It is somewhat amusing however, to find our Professor James, of Harvard, referred to as "a member of the faculty of the Cambridge-Boston, University," (page 84). Greater familiarity with the personnel of American Universities would have led the author to credit Princeton University with Professor Baldwin instead of the University of Toronto.

While, as has been said, the author admits that Italy does not rank with Germany, England and the United States in the study of psychology, we should not lose the significance of the fact that this voluminous and apparently accurate book emanates from that country. It is one of many indications of scientific activity in the Fatherland of Bruno, Vico and Galileo.

PRINCIPII DI LOGICA REALI. By *N. R. D'Alfonso*. G. B. Paravia e C. Turin. Rome, Milan, Florence, Naples. 1894. Pages, 70. Price, L. 1.50.

In this small treatise consisting of five lessons given in the second course of the Royal Lyceum of Rome, may be found a discussion of the following topics; logical and psychological representation, the judgment and its elements some considerations of the same, the formation of the concept and finally the concept. The treatment is elementary, logical and clear. Considerable attention is given to definition of the terms employed. The author seeks to avoid the confusion which he thinks has arisen from the failure to distinguish clearly between concept, idea, and representation. The work is of value both to students beginning the subject of psychology and to those who are already familiar with its principles.

THE PRINCIPLES OF BACTERIOLOGY. By *Dr. Ferdinand Hueppe*, Professor of Hygiene in the University of Prague. Authorised Translation from the German, by Dr. E. O. Jordan, Assistant Professor of Bacteriology in the University of Chicago. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899. Pages, x+467. Price. $1.75 (9s.).

There exist comprehensive manuals of bacteriology which attempt to bring together all the available data on the subject, and also text-books which both expound the methods used and set forth the more important facts of the subject with special reference to the needs of the physician; but in all these instances the natural-history side of bacteriology has been emphasised, while the scientific side has been kept quite in the back-ground. But, contends Professor Hueppe, bacteriology is now "in transition from the natural history stage to the scientific," and he has consequently endeavored in the present work to attempt "a critical and comprehensive exposition of bacteriology" based clearly and solidly on scientific conceptions. He terms it "the first mechanical and monistic exposition of bacteriology, in which "adequate recognition is given not only to the point of view of the physician, but to that of the botanist, the general biologist, and the chemist, and indeed to that of all those who have a general interest in the progress of modern science and who wish to inform themselves upon the practically important questions of the day." In this sense, the work will serve as a useful complement to the other books.

Dr. Hueppe is himself something of a metaphysician, and he has taken special delight in assailing the ontological conceptions which are especially rife in medicine, and which in his opinion have given rise to some very questionable develop-

ments and applications of bacteriological science. Dr. Hueppe is very radical and forcible in the expression of his views, and his opinions will be found to run counter to many popular and professional beliefs. He has laid special emphasis upon the hygienic lessons of bacteriology, and his chapters on immunity and the prevention of infectious disease are in a practical sense the most important in the whole book. They are also quite intelligible to the reader who would not care to enter on the technical discussions of the opening chapters; and certainly these questions of health are questions that appeal to every one.

The titles of the main subjects of the book are as follows: The Structure of Bacteria; The Vital Phenomena of Bacteria; Brief Descriptions of the Most Important Pathogenic Bacteria; The Cause of Infectious Disease; Can Disease be Cured by Combating the Cause?; Immunity, Protective Inoculation, Curative Inoculation; The Prevention of Infectious Disease by Combating the Cause of the Disease; and the History of Bacteriology. There are twenty-eight woodcuts in the book, and five colored plates.

ALLGEMEINE GESCHICHTE DER PHILOSOPHIE MIT BESONDERER BERÜCKSICHTIGUNG DER RELIGIONEN. Von *Dr. Paul Deussen*, Professor an der Universität Kiel. Erster Band, zweite Abtheilung: die Philosophie der Upanishad's. Leipzig: F. A. Brockhaus. 1899. Pages, xii+368.

The second volume of the voluminous history of philosophy which Prof. Paul Deussen is writing, and which was exhaustively discussed in Vol. V., page 456, of *The Monist*, treats of the philosophy of the Upanishads. This philosophy, in Prof Deussen's view, is the culminating point of Indian thought; it was reached in the Vedic and pre-Buddhistic period, and was never excelled in philosophical significance by any succeeding systems, neither by the Sânkhya system nor by Buddhism, which last he maintains is dependent in its essential points upon the doctrines of the Upanishads. The ideas of the Vedânta philosophy formed thus the primordial intellectual atmosphere of India, and have permeated all subsequent products, making the Upanishads possess for every Brahmanic Indian the same value that the New Testament possesses for Christians. This system covers, therefore, in Professor Deussen's opinion, a most momentous period in the history of philosophy, and is a phenomenon which deserves to be treated with far greater exhaustiveness and profundity than it has hitherto received. The subject is certainly historically, philologically, and philosophically a highly complicated one, and from Professor Deussen's previous original labors in these departments we may expect a very competent and unitary exposition of it. The reigning opinions here are greatly at variance, and almost totally irreconcilable, so that those who desire a scientific, first-hand, and strictly consistent presentation of the Vedânta doctrines will be compelled to resort to Deussen's authoritative book. Moreover, the execution of the task is enhanced by Professor Deussen's outspoken sympathy for this species of philosophical speculation.

The work is divided into six parts entitled respectively: The Philosophy of the Upanishads; The System of the Upanishads; Theology, or the Doctrine of the Brahman; Cosmology, or the Doctrine of the World; Psychology, or the Doctrine of the Soul; Eschatology, or the Doctrine of the Migration of Souls; and Salvation.

PSYCHOLOGY FOR BEGINNERS. An Outline Sketch. By *Hiram M. Stanley*, Member of the American Psychological Association. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899 Pages, 44. Price, 40 cents (2s.).

This is the concisest and simplest attempt that has yet been made to write a beginners' book in psychology. "The main object of a beginner in psychology, says the author, "is to acquire psychic insight and familiarity with method, and I "have tried to keep this end in view in this little book. The student from the very "beginning should be told as little as possible, but should learn and conclude for "himself from the simplest observations and experiments. Hence the teacher "should see that the scholar in all cases does the original exercises at the point in- "dicated in his own reading, writing them in the blank pages provided at the end "of the book; and the teacher should to some extent repeat and expand these ex- "ercises in the class. In my opinion Psychology should be a subject for the high "school, academy, and secondary school, and this sketch is particularly designed "for such work, but will, I hope, be found useful with beginners of any age, espe- "cially with those studying without a teacher, and in summer schools. My method "has been to give complete continuity to the treatment, and to proceed from the "known to the unknown, the particular to the general, and to incite constant orig- "inal and vigorous activity on the part of the student. The teacher in assigning "lessons should bear in mind that each original exercise is equal to at least one "page of text, and that the main work of the recitation period should be the ascer- "taining that each student has practical mastery of the subject as evinced in the "original exercises."

It will be seen from the foregoing quotation from the Preface to the work that the author has had sound and practical views before his mind. The book is printed in large type, and is bound in an extremely attractive form.

THE FOUNDATIONS OF ZOÖLOGY. By *William Keith Brooks, Ph. D., LL. D.*, Professor of Zoölogy in the Johns Hopkins University. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1899. Pages, viii + 339. Price, $2.50.

The sub-title of this work shows that it is a course of lectures delivered at Columbia University, on the principles of science as illustrated by zoölogy. It is entertainingly written, shows a wide command of biological literature, and some knowledge of philosophical speculation. The book has been inspired by the writings of

Berkeley, which have been thoroughly studied by the author, apparently to the neglect of the rest of the important and quite modern literature on the principles of science.

We shall give a few specimens of his reflexions. Dr. Brooks is quite undecided as to what explanation is, and we find no thorough or adequate discussion of it in his work. He maintains, for instance, that order is no explanation, but itself a thing to be explained, and advances the rather hazardous metaphysical assertion that "most students of the principles of science agree that natural knowledge is no "more than the discovery of the order of nature; although a moment's thought is "enough to show that the fact that events do take place in order is no reason why "they should, or even why they should take place at all." In fact, the entire upshot of his long work, from which one should naturally expect much, is very unconsoling on this point. He says: "Science tells us that the things that take place in "nature are neither less nor more than one who knows the data has every reason "to expect. With this the work of science ends; and here I must end my work "on the Principles of Science; for these principles fail to tell us why the things "we expect should be the things that come about. The question why the things "we expect should be the things that come about is the one that concerns the nat-"ural theologian; for it is the same as the question, What is the cause of Na-"ture?"

We find the author, in fact, throughout troubled with the theological and ontological problem. There is an utter hesitancy as to the general trend and most probable outcome of any special scientific inquiry; he is "unable to discover, in the present status of biology, any demonstration of error in the assertion that life is different from matter and motion," while, at the same time, he deems the opposite view unwise and precarious. He adds: "Science is still in its infancy, and "we know so little that I have no sympathy with those who discount the possibili-"ties of future discovery and assert that life is merely a question of matter and "motion, although I know no reason why this should not, some day, be proved, "nor am I able to see why any should find this admission alarming."

So as to teleology, we would hold him justified in his refusal absolutely to repudiate it, provided the precise character of that teleology which science accepts were defined; but it is certainly carrying the criticism of reaction too far to say that the modern biological theory of recapitulation adds nothing in the way of explaining the existence of rudimentary organs to Aristotle's declaration made centuries ago that they are "for a token"; or to affirm that the theory by which their history is made to account for their existence is as teleological as anything in Paley.

We are far from wishing to give the impression from these strictures that Dr. Brooks's work is one which does not abound in valuable discussions of the history and incidents of the development of zoölogical thought, or that its spirit and execution are not thoroughly commendable. Many of his remarks are excellent, and many of them forcible. The following is a good example of his ability to say things

courageously: "I fail to see why any should dread the extension of mechanical "conceptions of nature. If life is response to the order of nature, he who dreads "or fears natural knowledge seems unworthy of the conscious life of manhood, and "better fitted for that of a turnip or a clam. These things have the benefit of re- "sponse to mechanical principles without seeming to know anything about it; and "he whom these principles oppress like a nightmare might be more at ease if he "were a turnip. He might then have all the benefit of mechanical principles with- "out the horror of physical science which seems as subjective as the horrors of "delirium tremens. The sufferer should have our pity, but I cannot put myself in "his place, for nothing seems clearer than that the natural common sense of man "would preserve him from all horror of mechanics if he were left alone; that it "would, on the contrary, assure him that each new discovery in this field is added "proof of his sanity and of the value of his common sense." μκρκ.

THE DEVELOPMENT OF ENGLISH THOUGHT. A Study in the Economic Interpretation of History. By *Simon N. Patten, Ph. D.* New York and London: The Macmillan Company. Chicago: American Baptist Pub. Society. 1899. Pages, xxvi+415. Price, $3.00.

The author of this work has sought "to present a theory of history through concrete illustrations." The main trend of events only has been emphasised; the details have not been related. The choice of English history was made "because the conditions and circumstances isolating England for many centuries have made English thought normal and more uniform than that of her continental neighbors. . . . The growth, propagation and decay of ideas and modes of thought were unaffected by governmental interference or by foreign influence. Each new crop of ideas sprang up in virgin soil, matured, decayed, and gave way to its successor without any external interference to hinder its growth."

The "theory" of Dr. Patten is built up largely of the same elements and factors that have figured in the other more modern theories of civilisation and progress,—the elements of national character, environment, and racial ideals,—but he has assigned to these various influences rôles which are more in accordance with modern biological, anthropological, sociological, and historical research. In addition, he has given his own theory of the social classes (the "clingers," the "sensualists," the "stalwarts," and the "mugwumps"); has naturally laid very strong emphasis upon the economic aspect of social development; has drawn up a scheme of stages in the progress of thought; and has evolved a system of curves of thought of which the ascendant portions represent the economists and the descendent portions the philosophers. The economists are the inductionists, the discoverers of truth; the philosophers are the deductionists, the discoverers of errors: hence the distinction!

This theory, which, as we see, is in the main practical and economic as distinguished from theoretical and philosophical, Dr. Patten then applies to the de-

velopment of English thought, considering its racial, economic, religious, and political antecedents, the period of the Tudor expansion, the Calvinists, the moralists, the economists, and so forth. We cannot follow him into the details of his very interesting treatment, except to say that he has found that harmony exists in England between religious and economic concepts, and that the supremacy of the English-speaking race will depend upon the degree to which these ideals will enable it to cope with the conditions of a world-environment. As to science generally, he believes that the pressure of economic conditions, rather than the force of scientific exposition, changes men's opinions and beliefs. In conclusion, he discusses the socialising of natural religion, and asserts that from a social point of view there is nothing more natural than the principle upon which the Incarnation is based. Economist, inductionist, sole discoverer of the truth, he becomes in the end philosopher, deductionist, and even theologian, but still discoverer of truth. The curve of thought both ascends and descends, and has apparently reached a point of transcendental contrary flexure. Dr. Patten says: "The principle of incarnation "is an essential tendency in all life, and is revealed wherever the higher types "come in contact with the lower. It is as natural a manifestation of God as justice, "reason, or mercy. The incarnate God exhibits in the concrete what the God of "nature reveals in the slowly working processes. The will of the one is the will "of the other. Revealed religion is thus not an extension of natural religion to "new fields, nor merely miraculous exhibition of God's power. It is a verification "of the premises that natural religion has established. Had no plan of salvation "been revealed and no incarnation taken place, our conception of God would have "fallen short of the requirements imposed on higher life. He would have been "less noble than we have a right to expect. But as it is, revealed religion gives a "double verification. It shows that life is as high in form and quality as nature "permits, and that life has attained the permanent equilibrium for which all its "forms are striving. More than this is not necessary; anything less would be "complete failure." μκρκ.

L'Année Psychologique. Publiée par *Alfred Binet*. Avec la collaboration de H. Beaunis & Th. Ribot. Cinquième année. Paris: Schleicher Frères, Éditeurs, 15 rue des Saints-Pères. 1899. Pages, 902. Price, 15 francs.

The enormous amount of labor connected with the compilation of the *Année Psychologique*, which is a complete *résumé* of the work done in psychology for each year, has been very speedily brought to completion, and we now have before us the volume for 1898, covering nine hundred large pages of matter. The two most indefatigable contributors are M. Binet and M. Henri, of whom the former has contributed an original memoir on suggestibility, and the latter an exhaustive general review of the investigations relating to the muscular sense. The leading memoir is by Mlle. J. Joteyko, who gives a summary of the investigations on muscular fatigue; the second is by M. Claparède, on stereognostic perception. Be-

sides several other memoirs, there is a history of researches on cephalometry and an essay on olfactory sensations. The reviews and analyses are quite complete, and the bibliographical table shows that the enormous number of 2558 books, pamphlets, and articles were published in 1898 in general psychology and the related sciences. The editor is M. Binet, with MM. Beaunis, Ribot and Henri as associates. There are twenty collaborators.

ELEMENTARY ILLUSTRATIONS OF THE DIFFERENTIAL AND INTEGRAL CALCULUS. By *Augustus De Morgan*. New reprint edition. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899. Pages, 144. Price, $1.00 (5s.).

The publication of this new reprint of De Morgan's *Elementary Illustrations of the Differential and Integral Calculus* forms, quite independently of its interest to professional students of mathematics, an integral portion of the general educational plan which the Open Court Publishing Company has been systematically pursuing since its inception,—which is the dissemination among the public at large of sound views of science and of an adequate and correct appreciation of the methods by which truth generally is reached. Of these methods, mathematics, by its simplicity, has always formed the type and ideal, and it is nothing less than imperative that its ways of procedure, both in the discovery of new truth and in the demonstration of the necessity and universality of old truth, should be laid at the foundation of every philosophical education. The greatest achievements in the history of thought—Plato, Descartes, Kant—are associated with the recognition of this principle.

But it is precisely mathematics, and the pure sciences generally, from which the general educated public and independent students have been debarred, and into which they have only rarely attained more than a very meagre insight. The reason of this is twofold. In the first place, the ascendant and consecutive character of mathematical knowledge renders its results absolutely unsusceptible of presentation to persons who are unacquainted with what has gone before, and so necessitates on the part of its devotees a thorough and patient exploration of the field from the very beginning, as distinguished from those sciences which may, so to speak, be begun at the end, and which are consequently cultivated with the greatest zeal. The second reason is that, partly through the exigencies of academic instruction, but mainly through the martinet traditions of antiquity and the influence of mediæval logic-mongers, the great bulk of the elementary text-books of mathematics have unconsciously assumed a very repellent form,—something similar to what is termed in the theory of protective mimicry in biology "the terrifying form." And it is mainly to this formidableness and touch-me-not character of exterior, concealing withal a harmless body, that the undue neglect of typical mathematical studies is to be attributed.

To this class of books the present work forms a notable exception. It was

originally issued as numbers 135 and 140 of the Library of Useful Knowledge (1832), and is usually bound up with De Morgan's large *Treatise on the Differential and Integral Calculus* (1842). Its style is fluent and familiar; the treatment continuous and undogmatic. The main difficulties which encompass the early study of the Calculus are analysed and discussed in connexion with practical and historical illustrations which in point of simplicity and clearness leave little to be desired. No one who will read the book through, pencil in hand, will rise from its perusal without a clear perception of the aim and the simpler fundamental principles of the Calculus, or without finding that the profounder study of the science in the more advanced and more methodical treatises has been greatly facilitated.

The book has been reprinted substantially as it stood in its original form; but the typography has been greatly improved, and in order to render the subject-matter more synoptic in form and more capable of survey, the text has been re-paragraphed and a great number of descriptive sub headings have been introduced. An index also has been added, and a Bibliography of English, German, and French works on the Calculus.—*From the Editor's Preface.*

DARSTELLUNG UND KRITIK DER KANTISCHEN LEHRE VON DER WILLENSFREIHEIT. Mit einem geschichtlichen Rückblick auf das Freiheitsproblem. Von *Dr. phil. P. Salits.* Rostock: Druck von Adler's Erben. 1898.

This book of one hundred and ninety-five pages of exposition has sprung from its author's belief that the Kantian doctrine of liberty is frequently misunderstood and misinterpreted, and that both determinists and indeterminists have based their contradictory conclusions on the authority of Kant. According to Dr. Salits, the difficulty has arisen entirely from the fact that the concept of liberty is twofold with Kant, and that Kant himself vacillates in the precise definition of the concept. This has been the source of untold evils, which will doubtless be eradicated by Dr. Salits's work. Combined with the discussion of Kant's doctrine proper, the author has also given an historical retrospect of the problem of free will.

DIE ETHISCHEN GRUNDFRAGEN. Zehn Vorträge. Von *Theodor Lipps.* Hamburg und Leipzig: Verlag von Leopold Voss. 1899. Pages, 308. Price, 5 M.

The philosophical position of Professor Lipps is finely incorporated in the answer which he gives to Kant's famous question, What can we know? To this question, he maintains, one answer only can be given, and that answer is negative, and to the effect that the knowledge of the highest and most ultimate of things is denied to us. To the second question of Kant, What are we to do, what shall be our conduct? he has endeavored to give an answer in ten lectures which constitute the present work. This work treats of the "fundamental questions of ethics" with special reference to the ethical and socio-ethical problems of the day. His ambition is to make it a strictly scientific and objective presentation, and not that of an individual. He aims to discover the facts and the laws of moral sense, and to draw

from them consistent conclusions. He is opposed both to utilitarian and hedonistic ethics, claiming that it is neither the utility nor the happiness which results from an act that gives it its ethical value, but the Good, the conviction, the frame of heart (*Gesinnung*), the personality and man behind the act, strong, in perfect harmony with himself, and free. All the main questions of ethics, such as egotism and altruism, motives, evil, eudemonism and utilitarianism, autonomy and heteronomy, conscience, the ethical norms, teleology, the family and state, determinism and indeterminism, responsibility, punishment, and so forth, are treated, as are also fifty-four other minor but burning problems.

COLUMBIA UNIVERSITY CONTRIBUTIONS TO PHILOSOPHY, PSYCHOLOGY, AND EDUCATION:

Vol. II., No. 3, Basis of Early Christian Theism, by *Lawrence Thomas Cole. S. T. B., Ph. D.* May, 1898. Pages, 60. Price, 50 cents

Vol. II., No. 4, Early American Philosophers, by *Adam Leroy Jones, Ph. D.* June, 1898. Pages, 80. Price, 75 cents.

Vol. III., No. 1, The Formal and Material Elements of Kant's Ethics, by *William Morrow Washington, Ph. D.* June, 1898. Pages, 67. Price, 60 cents. New York: The Macmillan Co. Berlin: Mayer and Müller.

Dr. Cole contends that in all accounts of the theistic arguments, "it has been customary to pass over a space of well-nigh ten centuries of the Christian era in silence, or with such scanty and unsympathetic notice as to make silence the better alternative." It has been his endeavor to fill this yawning chasm in the history of philosophy with a critical discussion of the theistic metaphysics of the period beginning with the middle of the second century and concluding with the Council of Nice. He regards the estimate placed upon the theistic arguments by the Anti-Nicene fathers as predominantly the estimate of common sense, and claims that "it took the scepticism of a Hume and the criticism of a Kant, with the readjustment of all their followers, to bring us back at the close of this nineteenth century into substantial agreement with it."

Dr. Jones admits that "a review of the progress of philosophical thought in America reveals little that can be classed as distinctively American." He can find among early American philosophers two only who can be ranked as prominent, namely, Jonathan Edwards, the president of Princeton, and Samuel Johnson. These two authors were idealists of the Berkeleian type, but their idealism could not be regarded as a logical outcome of Puritanism which was entirely out of sympathy with philosophy, and condemned it, together with ethics, as contrary to religion. John Witherspoon, another famous president of Princeton, introduced the Scottish philosophy of common sense, which remained the dominant doctrine until within very recent times. Four other thinkers are mentioned by Dr. Jones, namely, William Brattle, Benjamin Franklin, Cadwallader Colden, and Thomas Clap. The brief bibliography appended to Dr. Jones's brochure is of value.

Dr. Washington is strnck with the fact that Kant's ethics is "thoroughly animated with the spirit of stoicism," and further that it was the outgrowth of a desire to refute the contemporary sensationalistic schools. Kant unfortunately expressed himself in terms peculiar to logic, and the system has frequently provoked a logical refutation which does not go to the root of the ethical truth conveyed. The terminology adopted was that which runs throughout the whole Kantian system, "of form and matter." The formal from the material elements it has been Dr. Washington's endeavor to separate.

SEELENMACHT. ABRISS EINER ZEITGEMÄSSEN WELTANSCHAUUNG. Von *Wincenty Lutoslawski*. Leipzig: Verlag von Wilhelm Engelmann. 1899. Pages, xvi+301.

Professor Lutoslawski is well known to the readers of *The Monist* as a gifted and versatile man who writes books in all the civilised languages of modern Europe. His philosophical theory is that of outspoken subjectivism and individualism, in full conformity with the ancient constitution of his native land, Poland. This tendency is manifest in his most recent book, which is written in German. He maintains here that no philosophy or view of the world can be demonstrated, for the reason that its contents transcend all experience, and that it is so entirely the product of the personal and peculiar character of the individual that it is best fathomed by being put to the test of regulating one's life by it. He believes that every independent man constructs some total conception of Being, with a view to determining the objects of his conduct. These many single philosophies of individuals it is not always easy to ascertain, since there is much to obscure them. The deepest feelings and presentiments of our fellow-beings are revealed only in the most intimate personal intercourse and friendship. Such intercourse Professor Lutoslawski has had with some very great men. To afford to minor and less gifted men, therefore, a means of shaping their conduct in accordance with the views of the great and powerful minds of the day, Professor Lutoslawski has here sought to epitomise and to amalgamate into a whole the convictions which have guided the lives of the greatest of his thinking contemporaries with whom he is personally acquainted Hence the title of his book, *Seelenmacht*. μ.

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A NOTE ON THE RELIGIOUS SIGNIFICANCE OF SCIENCE.

NO ONE who has watched thoughtfully the signs of the times can have failed to perceive that modern science both by the introduction of new materials of knowledge and especially by changing our point of view of nature and of human life, is rapidly transforming both our Philosophy and our Religion. The transformation is still going on and far yet from complete; and many fear that there is serious danger of its going too far. I wish to show that these fears are unfounded.

It is a trite remark that tendencies are apt to become fashions of the time, and, like fashions, are apt to run into extremes, and thus provoke reaction. Thus the course of progress of opinion has been likened to a swinging pendulum, which passes from one extreme to another, but with ever decreasing excursions, until it settles on truth. Or, again, to a rising spiral, returning ever upon itself, but gaining a little with each circle. Now, there can be no doubt that the most striking characteristic of modern times is the rapid advance of science, and therefore the most striking modification of the educational system is the increased introduction of scientific subject-matter, scientific ideas, scientific methods. This has led, in the popular mind, to a kind of glorification of science at the expense of other coördinate departments of intellectual pursuits, and has very rightly provoked some reaction among conservative

thinkers. Many thoughtful men are beginning to think that this apotheosis of science has already gone much too far in the popular mind, and therefore is likely to affect injuriously our system of education. Science is not only advancing with dizzying speed, but the scientific spirit and the scientific method are invading every department of thought, and claiming as her own everything in sight. There has arisen, therefore, in the conservative, and especially in the religious, mind a vague dread of the final result, not only on education, but on society itself. This danger-cry has found strong, though temperate and guarded, expression in the admirable address of Prof. Woodrow Wilson, at the sesqui-centennial celebration of Princeton in 1896. Now, I fully sympathise with Professor Wilson's view, and have myself on many occasions spoken as strongly as he; but I see clearly (as he apparently does not) that the cure for this disease, if it be such, must come from science herself. I will, therefore, first put the trouble as strongly as I can and then show the only possible remedy.

Science is so recent and its course so rapid, there is such an accumulation of new material and such a fermenting of new ideas, that there has not yet been time enough for organisation into rational knowledge, which is philosophy. Intellectual food is gathered and ingested so fast that there has been no time for digestion, assimilation and incorporation into our essential human nature. Science is as yet a vast storehouse, a treasury of material, arranged, it is true, in orderly manner according to its own laws, but not yet according to the highest law, not yet brought into harmonic relation with our moral and æsthetic nature, and therefore not yet able to help to guide moral conduct, which is the true end of all knowledge. It must yet be incorporated into our innermost human nature, becoming bone of its bone and flesh of its flesh. It must disappear as mere external possession, and reappear as character and spiritual power, before its real beneficence can be felt. Now, as most people value more what they have than what they are, are vainer of possession than of character, of learning than of culture, it has come to pass that the age has become vain and boastful of scientific progress, and intoxicated with extravagant hopes of the

speedy advent of a society regenerated by science. These optimistic philosophers would, therefore, cut loose entirely from the past. They say: "Let the dead past bury its dead, but follow thou the light of living science." They would destroy utterly, raze to the very ground, the old in religion, in art, and especially in social organisation, and build again all these at once on a new basis and out of new scientific materials, which they themselves undertake to furnish. And these self-styled scientific philosophers and social reformers are so convinced in mind and positive in statement that they are impenetrable to any other view. Verily, we had supposed that dogmatism was the preëmpted right of theology; but if so, then these new scientific philosophers have certainly "jumped the claim."

I have put the case as strongly as I can. Now, the answer:

1. It is evident to the most casual observer that this intoxicating effect of science, with its accompanying vanity, boastfulness, and extravagant hopes, and mad rushing in where angels fear to tread, is not found among true scientific men, but almost wholly among the pseudo-scientific. It is not the legitimate offspring of the true scientific spirit, but is the effect of scientific facts on the unscientific mind. The true scientific spirit is characteristically modest and cautious even in her own domain, much more in that which lies beyond that domain.

2. It is often said that we are now in a transition state between the old and the new, and that transition states are always dangerous. Doubtless increasing knowledge is, indeed, unsettling, and to some weak spirits perhaps dangerous. But there is no other possible cure for this but more and still more knowledge. In this case, at least, the principle "*similia similibus curantur*" holds good. But knowledge is increasing now so rapidly that we shall always hereafter be in a transition state. The only permanent cure, therefore, is to be found in a rational spirit, which recognises and accepts eternal change by evolution as a law. The introduction of new knowledge, especially a great new idea like the law of gravitation or the law of evolution, necessitates a complete readjustment of our whole mental furniture to a new and higher order. But unfortu-

nately, the mental furniture of most persons is so screwed to the floor that it is impossible to readjust without tearing up the whole mental flooring. But let me not be misunderstood. There is also another extreme in this regard. Mental furniture must not be fixed indeed; but neither must it be too movable. It must not be screwed down indeed; but neither must it be set on rollers.

But to return and put it another way: Certain general principles, beliefs, customs, etc., are necessary for effective social activity. But unfortunately these soon harden into an external shell of dogmas and creeds, and, with advancing progress, must be broken and thrown off. They are, first, necessary for activity, then helpful, then protective against dangerous changes, then finally obstructive of growth, and must be cast off. But, alas! society is left for the time in comparatively helpless condition for want of fixed general principles of action. New beliefs, new principles of activity, are soon formed; but again only external to the living spirit. These are speedily hardened again, and must in their turn be broken and cast off, and so on apparently indefinitely. To illustrate: The social organism has heretofore been and is now constructed on the plan of the crustacean. Its skeleton, its instruments of activity, are on the outside, enclosing and protecting all the vital parts. But life is conditioned on continuous growth. In this contest between interior growth and restraining shell, the latter must be broken and cast off, and then we are left in a helpless, soft-crab condition. Soon the crust hardens again into a firm skeleton, and efficient activity is regained, and perhaps more effective than before. But, interior growth continuing, the moulting must be repeated, and with it again the same helpless condition.

And must this go on forever? Must there not come a time when a rational philosophy shall prevail? Shall there not come a time when the social organism shall be constructed on the plan of the vertebrate instead of the crustacean, with the skeleton within, in eternal ethical principles, instead of without, in dogmas and formulas; and the exterior, with its customs, habits, forms of belief, etc., shall be left plastic and yielding to interior growth, sensitive to all external influences, and receptive of all new knowledge?

If so, then from that time forward growth will become steady, and no longer by a succession of catastrophies.

3. I said the final and permanent cure for the evils of society is the advent of a true rational spirit; and this will come with increasing knowledge. Now, nothing, I am convinced, will so contribute to the formation of this rational spirit as the clear and thorough apprehension of the idea of Evolution. The supposed dangers and evils coming from the dominance of the scientific spirit is completely cured by this youngest child of the marriage of Science and Philosophy. I say thorough apprehension, because it is this very idea that is supposed by superficial thinkers and pseudo-scientists to give reasonableness to their revolutionary views. It is this very idea which is most dreaded by ultra-religious conservatives.

I said the evils complained of will be cured by the idea of evolution. Let me explain: Professor Wilson says "science breaks with the past." Evolution, at least, cannot break with the past. She, at least, cannot do without the past. The very definition of evolution is growth—not manufacture; growth of the present out of the past, and of the future out of the present. Evolution, at least, cannot say, "destroy the old, and build again at once out of new materials;" the fundamental principle of evolution is that nothing ever comes in that way. For example: In the geological history of the organic kingdom old forms die and new forms come in. But how? Not created at once out of hand. On the contrary, some old forms die out and leave no progeny; but some are transformed into the higher new, and—mark this—all the new forms come in this way only; i. e., by transformation of the old. The same is true also in the growth of knowledge and in the growth of the social organism. In the evolution of knowledge new ideas and new theories take the place of the old, but not made out of wholly new material. On the contrary, some old ideas die out, and leave not a wrack behind, and some are transformed into the higher new, but all the new come only by modification of the old. In the evolution of society we see the same law. Some forms of social organisation and some institutions die out and leave no progeny, and some are transformed into the higher new. But all the higher new come not by

manufacture out of new material, but only by transformation of the old. Strange that these objectors to science as destructively revolutionary, and especially strange that Professor Wilson, a teacher of history, should not see this. For what is the so-called historic method but the evolution-method imported into the domain of social progress?

In conclusion, I am convinced that nothing so tends to generate a rational spirit—which is the only ground of safety to society—as the idea of evolution. It breaks down all hard and fast lines, and substitutes only gradations. It forbids all sudden creations at once out of the whole cloth, and substitutes only eternal growth. Dogmatism and partisanship cannot live in its presence, for it is the very spirit of tolerance in religion and in politics; not, indeed, the tolerance of indifference, but that of a true rational spirit. Both art and religion will be transformed by its genial philosophic spirit. When scientific facts and scientific ideas become, not alone an external possession, but assimilated, incorporated, as it were soaked in and made an integral part of our common human nature, then will they be taken hold of by the creative imagination, and there will arise a greater art then ever before. When beliefs and principles of action are vivified by reason, and become a common heritage of humanity, then shall we all rise to a higher plane of religious thought than ever before. Science has come, not to destroy, but to fulfil and verify all that is best and truest in our faiths and aspirations, and thus to purify and ennoble both art and religion.

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ON THE THEORY OF NERVE-ACTIVITY.[1]

"A THEORY of nerve-energy would have to show how precisely those properties which are characteristic of the activity of the nerves result with necessity from the multifarious aggregate of the conditions constituting them."

I have taken these words from the *Manual of Physiology* of Carl Ludwig,[2] that memorable man, who achieved so much for physiology during his long connexion with the university of Leipsic. And now that I am about to develop a special view of my own relating to nerve-activity, it is both appropriate and requisite that I should apply the criterion involved in Carl Ludwig's words to the theory which I am to advance.

If I were asked whether this view could be considered as a contribution to the theory of nerve-activity in the sense indicated by that great master of experimental physiology, I should have to confess that such is not the case; for neither from their constitution nor from their form can I deduce with necessity that property which I am going to attribute to the nerves, however much I may be inclined to assent to Ludwig's dictum "that a nerve is indebted for its energy to its constitution and structure," and to a change in those for a change in its energy.

The source from which I have derived my views relative to the mode of activity of the nerve-fibers, lies quite remote from all the knowledge we now have of their structure and of their chemical and

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[1] Academic Discourse delivered before the University of Leipsic, May 21, 1898. The German original has just recently been published by Veit & Co. of Leipsic.

[2] Second Edition, page 141.

physical properties, and I am therefore perfectly willing that the view which I have put forward as a contribution to the theory of nerve-activity should be regarded only as a conjecture concerning the same.

In justification of my position, however, I may add that even at best we are in possession only of conjectures concerning the real inner nature of nerve-activity. We know, thanks to Helmholtz, that any sudden alteration in the condition of the nerve-fiber caused by some stimulus, is propagated along the fiber with a measurable speed, and further, how great this speed approximately is. But the exact nature of that alteration, and the exact character of the process propagated along the fiber, we do not know. Dubois Reymond's classical investigations have made us acquainted with the electro-motor property of the nerve in its various conditions. But as little as a galvanic current gives us an explanation of the peculiarities of the chemical process to which it owes its origin, so little does the current derived from a nerve give us information concerning the peculiarities of the chemical change in the nervous substance. The assumption that chemical phenomena are the gist of the process which we are wont to designate as the activity of the nerve, is, of course, more than a mere conjecture. But in making such a conjecture we assert concerning the nerve nothing more than what might just as well be asserted of all living substances. And nothing is said which would characteristically distinguish the life of the nerve from the life of any other organ.

In fact, life is still as much of an unsolved riddle as it was when the so-called mechanical conception of vital phenomena overthrew the vitalistic, and awakened by its brilliant achievements the most sanguine expectations, foreshadowing results far beyond what has even yet been fulfilled, valuable and fruitful as this has been.

To whatever point the physical or chemical investigation of the animal organism has penetrated, it has always, sooner or later, come upon the mysterious action of the living substance of those elementary organisms of which the animal and the human body are composed. We have now learned modesty, and from having once believed that we had entered the holy of holies, we now acknowl-

edge that we have as yet scarcely passed the portico of the temple. Can it surprise us then that to-day the old fallacious doctrine of vital force which we imagined had been definitively vanquished, should again rear its head under new names? Let us confess that we ourselves are to blame for this because in the first exultation of success we promised more than we were able to fulfil.

Let us cease considering physiology merely as a sort of applied physics and chemistry and thus avoid arousing the justifiable opposition of those who believe it to be an idle task to seek an exhaustive explanation of the living from the dead. Life can be *fully* understood only from life, and a Physics and a Chemistry which have sprung solely from the domain of inanimate nature, and which therefore apply solely to inanimate nature, are adequate only to the explanation of such things as are common to the living and the dead.

This is very much, but it is not all, and I am fain to paraphrase here the words of a brilliant physicist[1] who has used them in an analogous connexion, and say: If the assertion that physiology is only applied physics and chemistry be taken to mean that the laws discovered in the domain of physics and chemistry are sufficient without extension and generalisation to explain fully the phenomena of life, "we are, in my opinion, confronted with a view which is in every respect comparable to that of Thales, who endeavored to explain everything from the properties of water. Think of the improbability of a wide domain of experience being absolutely exhausted by a narrower previously known one." If everything that took place in nature could be designated outright physical or chemical, whether it was subsumable under the present known laws of physics or chemistry or not, then naturally all phenomena of life would in such a case fall within the domain of physics and chemistry. But we cannot hoist our flag over a territory where we have never as yet set foot, much less explored.

At bottom, it was not the mere negation of vital force at this juncture that secured for physiology its brilliant successes, but rather, the concomitant introduction into biology of the rigorous

[1] E. Mach, *Die Principien der Wärmelehre*, p. 351.

methods of physical science and of the great mass of apparatus and appliances which had been created by those methods; and only in so far as vitalism persisted in employing unproductive methods for treating biological problems did it do real harm and was its overthrow of real benefit. In fact, every observed attribute of life which was susceptible of immediate physical explanation had already been physically explained in the heydey of vitalism. The laws of the lever had been applied to the movement of the human members, and the movement of the blood had been attributed to the contraction of the muscles of the heart, even at a time when the muscular activity itself was still conceived in characteristically vitalistic fashion. Even to-day we cannot explain this last-named activity, although it is one of the most palpable and most obtrusive of the actions of living things.

The impulse to resort to analogy and to carry over propositions abstracted from one domain into others is so great that there can be no fear that any phenomenon of life will long remain exempt from physical or chemical explanation after physics and chemistry have supplied the requisite means. To-day, the danger of precipitate and therefore of insufficient physico-chemical explanation of vital phenomena is perhaps greater than the danger that vital force should continue to be employed (to use a celebrated saying) "as the comfortable couch where reason is quieted upon the pillow of obscure qualities."

Even the mechanical theory of life has not been able to prevent the substitution of a new dogmatism for the old vitalistic creed, and in adducing a striking instance of this fact I reach the real subject of my present discussion.

* * *

I have already stated that the process which is propagated along a nerve-fiber in the shape of a so-called excitation is in its real nature unknown to us. Nevertheless, it is accepted as an established fact by most physiologists to-day that this excitation is always of exactly the same kind, not only in one and the same nerve-fiber but in all nerve-fibers; and that it can consequently undergo alteration only with regard to the strength and time of its

propagation, but not as regards its quality; and that, therefore, all functional differentiation of the nerves is exclusively resident in either their central or their peripheral terminal apparatus. So thoroughly convinced are many physiologists of the truth of this view, that they absolutely refuse to consider any theory which assumes a qualitative variability in the excitations which pass through the nerve-fibers. And they do this in the consciousness that they are supported by the authority of a Helmholtz, a Dubois Reymond, and a Donders.

But let us examine for a moment the meaning of the assertion that the excitations are absolutely alike in all nerve-fibers.

If it were possible to insert a portion of a sensory nerve into the path of a motor nerve, and to connect the former with the latter, fiber for fiber, a cerebral excitation of the motor nerve would pass unaltered through the inserted piece of sensory nerve to the muscle, which it would forthwith set into activity. Or, if we could cut out a piece of the optic nerve and insert in its place a piece of a motor nerve, and combine every fiber of the former with every fiber of the latter, functional continuity would be restored along with the anatomical continuity, and the perception of light and color would be possible, just as before.

Finally, let us imagine the optic nerve and the auditory nerve severed, and each brought into conjunction with the other crosswise. According to Dubois Reymond, we should in such a case hear the lightning with the eye as a noise, and see the thunder with the ear as a succession of light-impressions.

Of such a character are the consequences that flow from the assumption that the functions of the nerve-fibers are all absolutely alike. The impossibility of actually realising the hypothetical cases which have been adduced affect in no wise the correctness of the conclusions drawn from them.

* * *

What, now, are the considerations that could have lead to the enunciation of so definite an opinion regarding processes which are still involved in so much mystery for us? Carl Ludwig himself once considered the question of the likeness or unlikeness of the

nerve-fibers, and did so with all his wonted caution, but he finally left the question undecided, as did also Johannes Müller in his time. Since then, no new facts have been brought to light which could have tended to confirm the theory of the homogeneity of the nerve-fibers, as Ludwig called it. For the experiments on the grafting of the peripheral terminals of severed nerves, with the central terminal of a nerve having different functions, even if they had been successful, could not have decided our question. And yet, by the majority of physiologists the theory of homogeneity is regarded to-day as an established truth.

By his *Investigations in Animal Electricity* Dubois Reymond[1] believed he had "awakened into lifelike reality the hundred years' dream of the physicists and physiologists regarding the identity of nervous energy and electricity, even though in a slightly changed form." The facts which he adduced have been confirmed in all their essential points, and although their interpretation has turned out to be different from what he conjectured, yet the opinion which he cherished, according to which the essential nature of nervous activity found its expression in electrical phenomena, is still shared by many physiologists to-day. Now this view was in its time, and to-day is, so far as I can see, the principal foundation of the conviction which so generally obtains in the scientific world regarding the homogeneity of the nerve-fibers and of their excitations.

When we set a nerve in excitation at any point of its course by an artificial stimulus, the propagation of the process of excitation can be followed step by step along the path of the nerve by means of a galvanometer, for the reason that the electric behavior of the nervous substance changes precisely as the condition of the nervous substance itself changes in passing to the excited state. The galvanometer then shows us the current of action, or at the severed terminus of the nerve the so-called oscillation of the current of injury. It was rendered highly probable by Dubois Reymond (and later investigations have only confirmed the conjecture,) that these electrical phenomena are characteristic of all nerves, and that

[1] Preface, p. 15.

they accompany not only the excitations which have been produced by artificial stimuli, but also such as are disengaged in the natural way from the central or peripheral terminal apparatus of the nerve-fiber. If now the electric phenomena were the expression of the real inner character of the excitation passing along the nerve, the homogeneity of the latter would follow immediately from the homogeneity of the former; and different nerve-fibers could exhibit different behaviors only with regard to the intensity and time of action of the excitation.

It was afterwards discovered that the electric phenomenon in question admitted of scarcely any other explanation than that of a chemical process propagated along the excited nerve. Yet even this discovery could not shake the theory of homogeneity.

After that theory had once taken root, the identity of the chemical process was deduced immediately from the identity of the electrical behavior, and the idea never suggested itself that we might with just as good reason infer the identity of two chemical processes from the identity of their thermal effects, or the identity of the chemical transformation in two galvanic elements from the identity of their currents.

The electrical phenomena which accompany the excitation of the nerve furnishing no adequate foundation for the theory of homogeneity, the next natural support likely to be resorted to for this theory is that of the morphological and chemical homogeneity of the nerve-fibers. It is quite true, we are as yet unable to distinguish by the microscope and by chemical reactions every motor fiber from every secretory fiber, and every optic fiber from every auditory fiber. But the cases are numberless in which living elementary structures having different functions exhibit absolutely the same behavior when subjected to known optical or chemical tests.

The germs of quite different species of animals are frequently so much alike as to be confounded with one another; and the germs of different individuals of the same species naturally show a still greater degree of similarity. Yet no biologist has the least hesitation in ascribing to each individual germ some quite specific individuality, some personal idiosyncrasy, so to speak, of inward struc-

ture or molecular constitution by virtue of which a perfectly definite path of future development is marked out for it.

It is regarded as almost certain that the different functions of the secretory cells of the various glands are attributable to the physical and chemical differences of their vital substance, and yet in many cases it would be quite impossible by the microscope and micro-chemical methods at our command, to determine the actual function of any single glandular cell.

It was shown by Max Schultze many years ago, and recent inquiries have confirmed his results,[1] that while the pseudopodia of the same rhizopod merged and fused perfectly on contact, the pseudopodia of different individuals of the same species would not fuse on being brought together. Now, if the protoplasm of two individuals of the same species were absolutely of the same composition, it would be difficult to see why their pseudopodia should not behave with regard to one another precisely as the pseudopodia of the same individual do.

We are obliged, accordingly, to attribute to the living substance of every single one of these minute and inferior creatures, specific individual properties, by virtue of which their substance is distinguished from the substance of every other individual of the same species; although there cannot be, even in so patent a case as the present, the remotest thought of directly demonstrating these inferred differences by the experimental means of investigation at our command.

But if a distinctive individual stamp must be imputed to every one of the countless members of the same rhizopod species, why shall some such distinctive mark be refused to the elementary organisms of which the nervous system is composed? The fact that the rhizopods lead an independent life, while the nerve-elements are rigorously subordinated parts of a more highly developed organism, is no reason whatever for our not doing so, seeing that each individual nerve-fibre is connected with a vast and most varied host of

[1] Paul Jensen, "Ueber individuelle physiologische Unterschiede zwischen Zellen der gleichen Art." *Pflüger's Archiv für die ges. Physiologie.* Bd. LXII., p. 172. 1895.

vital functions, and that consequently it can according to the principle of the division of labor be highly differentiated; whereas no such division of labor can come into consideration in the case of the individuals of a rhizopod species.

In this division of labor of our organism lies, in fact, part of the answer which I should give to the advocates of the theory of homogeneity, if they were to ask why I am anxious to assume heterogeneity in places where the assumption of homogeneity appears to be adequate to explain the function of the nerve-fibers as simple organs of conductivity. The argument that I have adduced, they would contend, proved at most that the sameness of all the fibers cannot now be directly demonstrated, that there are even reasons for suspecting them to be not the same, but that in any event no counterproof to their theory is furnished. Even the wires which conduct electricity, they would say further, may be put to very different uses, and yet the electrical phenomenon in the conducting wires is qualitatively the same. The fact that the excitation of a glandular nerve produces a secretion, while that of a muscle-nerve produces a movement, is sufficiently explained by a difference in the terminal apparatus upon which those nerves act; and just so much ground and no more is there for supposing a qualitative difference of excitation to result from a difference in the stimuli by which the nerves of the several sense-organs are excited. The further fact, they would continue, that sound is able to excite the auditory nerve and light the optic nerve is due entirely to the different structure of the apparatus at the peripheral end of these nerves, —one apparatus being especially adapted for the reception of sound-waves and the other for the reception of light-waves and for their transformation into nervous excitation. If the sound were to strike directly upon the auditory nerve itself, and not on the peripheral apparatus, if the light were to fall directly upon the optic nerve itself, these nerves would not be excited,—a proof that the so-called specific excitability of the various sensory nerves is not due to any dissimilarity of the latter, but entirely to the differences of the terminal apparatus which receive the impression.

In answer to this oft-repeated argument, it must be frankly

confessed that so far as our present knowledge goes, no conclusion whatever follows from the varying behavior of the sense-organs toward different sensory stimuli in favor of the assumption of a specific heterogeneity of the sensory nerve-fibers; but neither does anything follow in contravention of such an assumption. And it must be further admitted that considering the dissimilarity in results which follow upon the excitation of nerves that act centrifugally according as they set a muscle or a gland in activity, no conclusive argument is forthcoming either in favor of or in contravention of the homogeneity of these nerves.

But the situation assumes a different aspect when we consider the manifold results to which the excitation of such sensory nerves leads as have not their terminus in such heterogeneous organs as the muscles or the glands, but all end in the brain. For instance, we are compelled to inquire how it is that the excitation of one nerve brings with it the sensation of light and color, that of another the sensation of sweet and sour, that of a third the sensation of heat and cold, while at the same time all these nerves carry to the brain excitations which are absolutely the same in quality. To this the theory of homogeneity has always answered without the least ado that it is because the like nerve-fibers of the tongue and of the eye lead to unlike nerve-cells in the brain, some of them to cells whose specific character enables them to take up the excitatory conditions that correspond to the sensations of taste, others to cells which conformably to their specific function respond to the excitation of the fiber with precisely that physiological process whose psychical correlate is a sensation of light.

And here finally we are met with the frank concession that that interior commotion of the nervous substance which we call excitation or activity is, at least in the various sensory centers of the brain, specifically differentiated, and that here at last the functional homogeneity reaches its termination.

* * *

While this doctrine was taking its development,—a doctrine according to which all the nerve-fibers are exactly the same in kind, but the terminal apparatus which are functionally connected with

them are different in kind,—the idea necessarily suggested itself of separating the nerve-fibers as a particular group of elementary structures from the nerve-cells; but, even at the period of the development in question, it would have been quite admissible, in view of the anatomical continuity which had been established in numerous instances between cells and fibers, to have inquired by what right physiologists ascribed to the cells functions which varied in character, whereas they denied to the fibers connecting them all specific dissimilarity whatever, and that they did so in spite of the fact that chemical and physical research had not been able to discern any more characteristic differences in the substance of the cells than it had in the axial cylinder of the fibers.

Since that time, a different conception of the elementary structures of the nervous system has found almost universal acceptance. Every nerve-fiber, according to this theory, is associated in such wise with a nerve-cell as to form with it a single elementary organism only; and the living substance of that organism, which is collected in more abundant quantities about the nucleus of the nerve-cell, is continued into the fibers. Accordingly, the nerve-fibers would be integral constituents of these elementary structures of the nervous system, or *neurons*, as they are called. On this theory, the idea is quite natural to ascribe to the fibers which continue the cells the same specific differences which physiologists were obliged to assign to the nerve-cells of the various cerebral centers.[1] But as soon as we do this, we no longer have before us cells which, though capable of performing different tasks, are yet connected by filaments having quite the same functions, but we have elementary organisms whose specific or individual dissimilarity extends to their remotest filar prolongations. A nerve-trunk is no longer a mere bundle of conducting wires disengaging different sorts of effects according to the kind of apparatus with which they are connected at their termini and being at the same time in their own specific function absolutely of the same kind; but it is a bundle of living

[1] I offer no opinion as to the correctness of the histological doctrine of neurons. I lay it at the foundation of the present discussion because my theory needs some definite histological substratum.

arms which the elementary organisms of the nervous system send forth for the purpose of entering into functional connexion with one another, or of permitting the phenomena of the outside world to act upon them, or of exercising control over other organs like the muscles and the glands. And in each one of these arms a quite special kind of life is active, corresponding precisely to the neuron to which the nerve-fiber belongs. The conducting path which unites a sense-organ with the cerebral cortex, or the latter with a muscle, appears as a chain of living individuals of which every member, although always dependent upon its neighbors, still leads a separate life, the specific character of which is generally different in the different parts of the nervous system. Even in the neurons of the same group it is not absolutely the same, but bears in each of them a more or less individual stamp.

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The theory of the homogeneity of the excitatory process in all the nerve-fibers involves the further assertion that this process remains qualitatively the same in one and the same fiber, and that it is variable only as to intensity and time of propagation.

I once advanced views relating to the processes in the nerve-apparatus of the visual organs which presupposed that in one and the same retinal element different processes could be set up by light-waves of different rates of vibration. The physiologists declared such a view inadmissible inasmuch as more than one process in the same structural element would presuppose more than one conduction-process in the corresponding fiber, a view which physiology was forthwith compelled to repudiate.[1] And this dogma, according to which every nerve-fiber is held to be capable of only one kind of excitation, had actually been extended also to the nerve-cells. True, as already said, physiologists were even then compelled to ascribe to the nerve-cells of the different sensory centers different functions; but in one and the same cell the excitation was said to be of unalterable quality.

It was no less an authority than Helmholtz who introduced this

[1] Donders, "Ueber Farbensysteme," *Arch. f. Ophthalmol.*, XXVII. 1881.

conception into the physiology of sensation, and to-day his disciples still esteem the doctrine of cerebral cells sensitive only to red, green, or violet, as the rarest fruit of Johannes Müller's doctrine of the specific energies of the sensory nerves. But I am convinced that Johannes Müller would not have accepted such a view, for his conception of biology was thoroughly monistic, and he would not have denied to the cell of the brain what must be conceded to the lowest unicellular organism, namely a more or less wide qualitative variability of its inner life.

Who can deny that the chemical changes in the substance of an infusorian vary qualitatively according to the changes in its external life-conditions; for example, in food material, or in other stimuli acting upon its body? And even granting that the progressive division of labor which accompanies the increasing structural complexity of the animal organism, in general brings more structural uniformity into the life of the individual cells, still there is no ground for the view that just in the nerve-cell this uniformity can become as complete as the homogeneity theory demands.

Granting, however, the possibility of qualitatively different excitation-conditions in the same cell (and in the fiber springing from it), then there is opened for the theory of nerve-life a series of points of view which are quite excluded by the homogeneity theory.

At the outset it follows that a neuron which is capable of various kinds of activities, will possess a correspondingly complex excitability, that is to say, it will vary in its reactions according to the nature of the stimuli, it will respond by one or another of its habitual special activities; in brief, the activity of the neuron and of its fiber may vary, not merely, as has been supposed, in intensity but also in quality, according to the nature of the stimulus, whether this be exercised by an external sense-organ, or by an adjacent neuron. A further consequence of our view would be that the effects in those non-nervous elementary organs with which centrifugal fibers stand in functional connexion, might also vary with the kind of excitation conducted in the fiber.

For the motor fibers, of course, there is, owing to the uniform

action of the muscle-fiber, no apparent reason for such a view. It is otherwise, however, with the nerve-fibers which govern the activity of a gland. The view now generally accepted is that, in conformity with their unalterable homogeneity of excitation, these secretory fibers can influence the activity of their dependent gland-cells only quantitatively. But how would it be if, according to the nature of the excitation given by the nerve-fiber, the chemical processes in the secretory cells were different, and consequently the nervous system could affect, within certain definite limits, the *quality* of the secretion furnished by one and the same cell?

And would not similar views hold in regard to the so-called trophic activities of centrifugal nerves? Inasmuch as these activities do not, as in the case of the motor or secretory nerves, immediately reveal themselves by easily demonstrable movements, they have hitherto remained rather within the domain of conjecture than in that of safely ascertained facts. If, however, the nervous system exerted an immediate influence, not merely on the motor and secretory, but also on the other elementary organs of the body (e. g., on certain epithelia, on the developing cells of the ovary, etc.), then here too the answer to the question whether such an influence were variable only according to quantity or also according to quality, would be of far-reaching influence.

But let us turn back to the activities which the excitation of a neuron exercises on those other neurons with which it is connected.

If, as histology teaches us, a sensory fiber entering the spinal cord divides into an ascending branch and a descending branch, and from these latter there branch off the so-called collaterals which finally stand in relation with other neurons (it matters not whether through direct contact or through connection); if finally every one of these neurons by its branching stands in functional relation with still others, and so on; then, from a purely anatomical standpoint, there exists for an incoming excitation an incalculable multiplicity of paths through the central nervous system. If now an excitation which has seized a neuron, should pass on indifferently to all the other neurons with which the first is functionally connected, there

would result an exceedingly wide-spread diffusion of the excitation entering through a sensory fiber or coming from a neuron to the cerebral cortex, a diffusion such as is not known to exist, or, at the most, is only approximated to in motor effects under pathological conditions.

It must consequently be assumed that the excitation of a fiber does not take indifferently all the anatomically given ways, but selects predominantly certain determined paths, diffusing itself in the others only in a more or less enfeebled manner or only exceptionally; and the question hence arises: What is the determining factor for this choice, and for the varied ratio of the strengths with which the excitation propagates itself along the many possible paths?

The homogeneity theory finds the answer in the different degree of excitability and conductivity of the individual paths, and in the different amounts of resistance offered to passage from one neuron to another. As for the further diffusion this is made to depend entirely on the strength of the incoming stimulus.

Numerous facts from the sensory and motor territories of nerve-life teach us that the innervation issuing from a neuron can diffuse itself in the nervous system very differently according as certain other excitations take place at the same time. For example, though the stimulus be the same, a reflex movement is sometimes reinforced and sometimes inhibited by excitations issuing simultaneously from another place on the periphery of the body or from the brain. Accordingly, the homogeneity theory accepts the view that resistance to conduction in a neuron can sometimes be increased and sometimes lessened by excitations which reach the same neuron from another direction, in other words that sometimes a so-called path-breaking, sometimes an arrestation takes place; but it does not further explain how excitations which are said to be always of the same kind and to differ only quantitatively, can at one time operate on the neuron so as to promote, and at another time so as to arrest, its function.

Everything is seen in a different light, however, as soon as a qualitative variability of the conducted excitation, and also a quali-

tatively different excitability of the conducting paths, are admitted. If the individual nerve-fiber is suited for the taking up and transmission of definite qualities of excitation, either preferentially or exclusively, *then the path which is taken by an excitation is coincidently determined by the quality of that excitation.*

As a report is principally taken up and circulated by those who take a special interest in it, that is to say, the paths of its spreading depend on the nature of its contents, so to a definite afferent excitation those neurons will react preponderatingly whose peculiar nature precisely corresponds to that excitation.

The mutual relations of neurons will then depend not merely upon their anatomical arrangement, but also on their degree of internal structural affinity. And as one and the same fiber need not be adapted merely to *one* kind of excitation, but may be adapted to a certain number (though within a narrow range), so not only will the same path be able to conduct various kindred qualities, but the excitation issuing from the same neuron will be able, according to its particular quality, to penetrate various parts of the nervous system.

If, further, excitations should be simultaneously brought to the same neuron by two of its neighbors, then according to the homogeneity theory these excitations could on meeting only strengthen or weaken each other. According to our view, however, the two excitations could be of different kinds, and from their meeting in the same substance might originate a new quality, which would indeed be closely related to the two single excitations, but not like either.

And generally the whole life and being of the nervous system, its ontogenesis and phylogenesis, appear in a totally different light as soon as we give up the dogma of the absolutely homogeneous function of all nerve-fibers, and ascribe to the individual fiber-groups and fibers specifically or individually different biologic characters. For that dogma excludes from the neuron every capability for development and improvement, in so far as such capability is not already inborn and in so far as it is not a mere augmentation

of its excitational or vital process, which latter is from the beginning to the end of its life supposed to be peculiar and unalterable.

Rightly have the opponents of the doctrine of the specific energies of the sensory nerves pronounced against the view of a life-long unalterable constancy of function of the nerves, but they went, as I conceive, too far when they contested the congenitally different and special nature of the individual sensory nerves, accepted the indifference of function of all sensory fibers of the new-born, and regarded all functional differences of nerve-fibers, which are the phylogenetic acquisition of innumerable generations, merely as the result of an adaptation to heterogeneous, individual sensory stimuli during the post-embryonic period.

Of course after birth the influences of the external world belong to the conditions of the further normal development of the whole body, and the sensory stimuli especially are indispensable conditions of development of the nervous apparatus of our sense-organs. But light, for example, finds in the eye of the new-born babe not a nerve-substance from which, so to speak, anything whatever can be made; in other words, a substance which, if it could be transposed from the eye into the ear or into the tongue could be educated by the sound-waves to be a medium of auditory sensations, or by gustatory stimuli to be a medium of taste-sensation.

As the germ sprouting from the earth needs light to become a green plant, so in the new-born babe the neuron in the eye needs light, and the neuron in the ear the sound stimulus, to complete its course of development; but just as light never makes the fungus green, so it could never make the neurons of the ear see if they should be transplanted into the eye. As I take it, the neurons of our eye are not merely *educated*, but are *born* for seeing, and likewise those of our ear for hearing.

This, however, does not exclude the fact that, within their own narrow congenital limits of existence and action, they are capable of further individual development. And the same holds good (sometimes more, sometimes less so) of all parts of our nervous system. It is true, the farther back in the immeasurably long developmental series of the animal organism a given part of it can

be traced, the more fast and sharp is the congenital stamp of it function, and the less capable does it appear of transformation an development in the course of its further life. But the cerebra cortex is reckoned among the phylogenetically youngest parts o our nervous system, and its neurons belong, as it seems, to thos elementary bodily organs which in post-natal life are afforded th relatively widest sphere of individual action under the influence o impinging stimuli. Now, how is such a development conceivabl if the internal activity of a nerve-fiber, or a nerve-cell, in brief neuron, is to be always of one and the same kind?

What is it then that a neuron of our cortex under normal cir cumstances experiences? In other words, of what do the stimul which encounter the same and determine its internal activities consist? Under constant conditions of nutrition, these are mainl the excitations conducted to it from those other neurons whic stand in relation to it by means of the nerve-fibers. If, however these nerve-fibers always conduct to it only the same kind of exci tation, have, so to speak, only one note to their lyre, and therefor the stimuli which the neurons experience throughout life are th same and are variable only in quantity and time, then the reactio of the neuron will also always be one of the same kind, and th afferent stimulus can only liberate in the nerve-cell forever *the sam* activity. And if, as the homogeneity theory concedes, the latte could be different in the different nerve-cells, still in one and th same cell, and in so far as it depends upon the afferent excitations it would remain the same its whole life long.

It will be altogether different, however, if these excitations var qualitatively, according to the nature of the neighboring neuron from which they come, or if the afferent excitation from one an the same neuron may vary within certain qualitative limits. The a more or less rich multiplicity of excitations will take the place c the just-mentioned monotony that the neuron experiences from it neighbors, and, as this neuron is in its turn capable of heterc geneous activities, there is also opened to it the possibility of reac ing to different impulses in different ways.

The nature of this reaction will, of course, also be determine

by the inborn individuality of the neuron; but of the entire stock of innate qualities which it brings with it from birth those will be most fully developed in the course of its life to whose development the neuron is most frequently or most strongly excited by its neighbors. Or, briefly stated, the neuron will possess the capability of qualitative and not merely of quantitative development, which last would, according to the homogeneity theory, alone be possible to it.

According to its place in the nervous system, its more or less manifold relations to other neurons and its inborn structure, this subsequent development will be more or less many-sided, and the doctrine of the homogeneity-theory that the sameness of excitation which the neurons experience conditions a corresponding uniformity in their further development, may perhaps approximately hold for entire large groups of neurons. On the other hand, however, all experience or training both sensory and motor,—in brief, everything that can be called conscious or unconscious memory in the widest sense of the word,—is to my mind not conceivable unless the living substance of the nerve-cells and fibers is capable of a qualitatively variable development.

I have sought in vain in the writings of those supporters of the homogeneity theory who have occupied themselves with considerations concerning the physiological foundations of nutrition and exercise, for a satisfactory conception of the subject. For an explanation of the development of the central nervous system corresponding to the psychical development, we are with reason directed to the possibility of the origin of new connections between the neurons, to alterations of excitability and conductivity in the paths already provided, to the opening and the increasing erosion of certain old paths by use, etc. On all these, old or new, pervious or impervious paths, however, that which is conducted through the nerve-fibers still remains (according to the homogeneity-theory) always the same, and everywhere it is a matter only of moreness or lessness and of variable velocity. The whole nervous system, according to this theory, appears like a land whose numerous communities are connected by a richly developed network of roads, on which latter,

however, always and everywhere, only one and the same kind of wares is transported.

Writers love to compare the nerve-fibers with telegraph or telephone wires, and they will consequently, perhaps, point to the endless multiplicity of things which can be transmitted through wires of exactly the same kind. The comparison is seductive, for if spun out farther, it seems suited to solve all difficulties at a single stroke.

In place of the undoubtedly "obscure" specific or individual "qualities" of the nervous processes of which I have spoken, appears a multiplicity of oscillations of different temporal and spatial form, of which the nerve-substance is the mere *vehicle.* But one finally comes to exactly the same result with this comparison as I do. For one must admit that neither in all nerve-fibers is the same oscillation-form always transmitted, nor is every individual nerve-fiber susceptible of all the oscillation-forms which are possible to the nerve-substance generally, but only of those to which it can respond.

What we have named the specific energy of the fibers or cells reappears here as special resonance-capacities corresponding to definite oscillation-forms. What we formerly called an inborn, acquired or individual characteristic, becomes here the pitch; and, as with us, the specific excitabilities, so here the resonance and previous attunement of the neurons determine the paths in the nervous system which a given oscillation-form shall enter upon.

We accordingly acquire only another mode of expression for one and the same thing; and, as I conceive, one not corresponding so well to the facts, inasmuch as it takes no account of that which in an entirely unique way characterises all life, namely metabolism, that chemical change in the living substance whose qualitative differences it is at present (and may be forever) impossible to express by purely quantitative spatial and temporal terms.

From all that has been said it immediately follows that I not only agree with the teaching of Johannes Müller, but would like to see the scope of his conception much broadened. The specific energies are, according to my view, a phylogenetically acquired

heirloom, not merely of the sensory nerves, but more or less of *all* neurons, of their fibers as well as of their cells. But I consider that the inheritance allotted to the individual neuron is by no means so sparing and uniform as was assumed in the case of the cells of the sensory centers, and further that it was not bequeathed with a codicil that the heir should not add any newly acquired riches to his inheritance.

E. HERING.

LEIPSIC.

DE MORGAN TO SYLVESTER.

THE most extraordinary personage for half a century in tl mathematical world was James Joseph, self-styled Sylveste

The wittiest, most permanently charming of English logicia is De Morgan, founder of the now-towering Logic of Relatives.

No word of Sylvester's about De Morgan has ever been r corded; nor any word of De Morgan's about Sylvester except tl brief sentence in a letter to Dean Peacock, November 13, 183 "You are, of course, interested in all that concerns Dr. Youn A publisher in London has bought or will buy the plates of tl *Lectures*. He proposes to republish them (catalogue excepte in parts, transferring the copper to lithograph. My colleague Sy vester is to put notes, which *with reading* he will do very well."

Once the name occurs in the opening sentence of a letter Herschel, May 30, 1862:

"My dear Sir John,—I should not wonder if Sylvester and y were at one without any intercommunication of your particles."

That is all.

Yet Sylvester was for a short time a pupil of De Morgan (182

There was only eight years difference in their ages, thou De Morgan was dead and gone before Sylvester even began h creation of our Western Continent for mathematics.

The pupil, after a decade, became (1837–1838) the colleagu by appointment to the chair of Natural Philosophy in Universi College, London.

This official connexion was sufficiently brief. Sylvester retir from University College in the session 1840–1841, and immediate

afterwards accepted the Professorship of Mathematics in the University of Virginia.

Of his six months in the wilds of Charlottesville and of his exit thence, least said, soonest mended. The Virginians so utterly failed to understand Sylvester, his character, his aspirations, his superhuman powers, that the Rev. Dr. R. L. Dabney, of Virginia, has seriously assured me that Sylvester was actually deficient in intellect, a sort of semi-idiotic calculating boy!

On the 15th of September, 1855, Sylvester took up the appointment of Professor of Mathematics at the Royal Military Academy, Woolwich, and to him there were written the precious letters from De Morgan which form the final cause of this brief paper.

He occupied K Quarters, Woolwich Common, being the last of a long list of residential professors.

De Morgan's first letter makes it probable that at first, temporarily, he occupied A Quarters on the Common. His permanent residence was a commodious house with a good garden. There, seated under a walnut tree, he made some of the greatest of those marvellous discoveries and creations with which he has enriched all time. Would that the memorial medal, to be awarded triennially by the Royal Society, could have pictured his face lighted with such "solving-the-universe." Instead, the mood it shows is of those periods "wasted in fighting the world."

Not even the existence of the following letters has ever before been known to the world.

7 Camden Street, January 8, 1856.

My Dear Sylvester.

Can it be *a* the Common? Your mark is A very distinct. Hav you given up living at a specific number, and taken to an algebra ical symbol?

You will certainly be directed to at

$$\begin{vmatrix} a, & b, & c \\ a', & b', & c' \\ a'', & b'', & c'' \end{vmatrix}$$

if you go on in this way.

I am very glad you like your new quarters. Your simile Egyptian bondage reminds me that Lincoln's Inn Fields is said be exactly the size of the base of the great pyramid.

Now some have said that your ancestors built the pyramids the days when they were making bricks without straw. See th old book which a living speculator (the man who invented th

machine for the postage stamps) says was originally written i *Greek*, the language of *Canaan*, and afterwards translated int Hebrew.

I hope, when you went away, you killed all their first-born especially such as were insured in the office. Nevermind, *renovar dolorem* is one of the pleasures of life—and you are now *professiona ally* occupied when you handle a determinant.

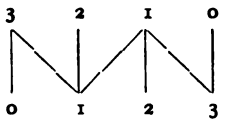
You will smile when you look at the answer to the puzzle.

Who has laid down what they used to call the *affections* o *oblique* spherical triangles, meaning the relations of acute an obtuse? I cannot find anybody. Now the law of these things i as follows;—

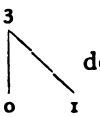
In every oblique angled spherical triangle, *either* each side i of the same *name* (acute or obtuse) with its opposite angle, or a *odd* number of *acute* sides coexists with an *odd* number of *obtus* angles.

And conversely, every case contained under the preceding exists, except that *three* acute sides cannot exist with three obtuse angles.

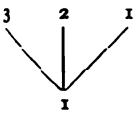
All this is figured in the diagram I sent you where the upper



numerals denote the number of *sides* which are *acute*, and the lower ones the number of ANGLES which are OBTUSE.



Thus denotes that three acute sides coexist with none or one obtuse angle.



denotes that one angle (only) obtuse consists with either 3, 2, or 1 acute sides.

But denotes that with two sides acute (and one obtuse) there must be one, and only one, obtuse angle.

For so small a matter this is useful enough.

What I want to find out is whether anybody has ever taken the trouble to collect the cases, and to state the result.

I am pretty sure that neither Delambre, Puissant, Legendre, Cagnoli, nor T. S. Davies, has done it. And these are the mathematicians I know who have paid most attention to spherical trigonometry in modern times. Yours very truly, A. DE MORGAN.

T. O.

Another actuary has followed you out of that field, but not quite so creditably. Neison is, I understand, hiding from his creditors, and obliged to give up all his posts.

PROBLEM. If a professor at Woolwich runs away from his wife, and his successor takes his house, required to ascertain how far the same successor is bound to take the wife too?

[The Differential Calculus is excluded.]

7 Camden Street, Feb. 10, 1856.

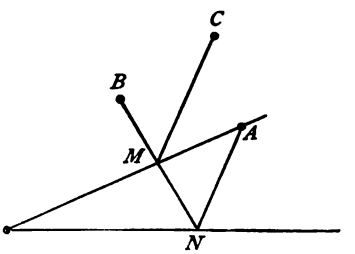
DEAR SYLVESTER:

I send you my exposition of Newton's method, arising out of the Newton-Taylor-Sterling-Stewart-Cramer-Lagrange-Lacroix-Minding-Serret-De Morgan chain of events.

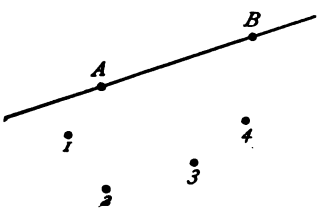
I had been trying to get a really Euclidean demonstration of the proposition that any five points in one plane may be the projection of five points in a circle. All the demonstrations draw a great deal too much upon things visible in algebra but not in geometry.

At every outlet I found a bothering bit of geometry which *just* cut me off. Here was one which I gave to Rutherford, who looked at it, at first with great confidence, as a thing which would be soon finished. But he found himself stopped.

Can you manage it simply?



Given two lines, a point A in one of them, and *any* two other points B, C. Required to draw BMN cutting the two lines in M and N so that CM, AN are parallel. The problem is certainly Euclidean, for it leads to an equation of the second degree with one unknown quantity. I will not allow you to assume that four points



1, 2, 3, 4, not in a straight line, cannot have more than *two equianharmonic* pencils with their vertices in one straight line. This

is another way out of the original question, and therefore is, I doubt not, connected with the problem I give.

Whence came the word *anharmonic?* It is Chasles's, I believe. Is *an* the ἀνά or the ἀν privative?

I am used to the word *enharmonic* in music, which I suspect is just as badly derived. Yours very truly,

A. De Morgan.

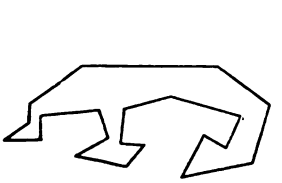
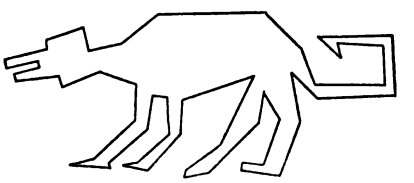
7 Camden Street, April 11, 1856.

Dear Sylvester:

At last I return you your quarter squares, with whole thanks. They go by this post. Newman tells me to-day he hears the journal is abandoned—is it true?

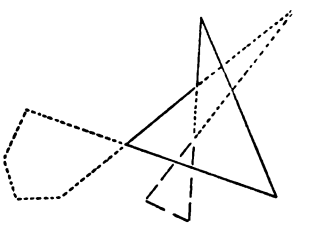
The following connexion between the partition of numbers and the formation of autotomic polygons struck me a few days ago. I find it tames that interminable list of hexagons which one has to draw in Pascal's theorem. (N. B. It is a great pity he had two A's in his name. If he had been Pescal, the hexagon PESCAL would have been a *fait établi*.)

1. Learn to denote a simple polygon—not autotomic—as

 or 

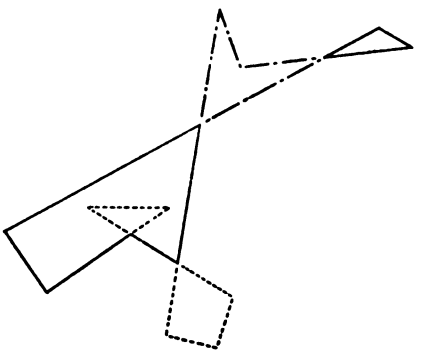
by the number of pairs of right angles in the sum of its internal angles, $m-2$ for an m—gon. Let $m-2$ be the type.

2. Every autotomic polygon is formed by simple polygons joined at opposite angles, as



And the type of the whole is the sum of the types of its parts.

The type of this figure



is $3\left\{\begin{matrix}2\{1\\1\\2\end{matrix}\right.$ a simple pentagon with two tetragons and a triangle at three angles, and a triangle joined to one of the tetragons.

Or the type may be $2\left\{\begin{matrix}3\left\{\begin{matrix}1\\2\end{matrix}\right.\\1\end{matrix}\right.$, $1\{3\left\{\begin{matrix}2\{1\\2\end{matrix}\right.$, $2\{3\left\{\begin{matrix}2\{1\\1\end{matrix}\right.$, or $1\{2\{3\left\{\begin{matrix}1\\2\end{matrix}\right.$

The figure is a $\{(3+2+1+2+1)+2\}$-gon.

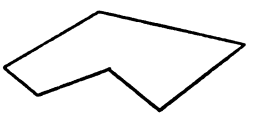
All the partitions of $m-2$ are 2^{m-3} in number. If one of these be $a_1+a_2+a_3+$, the types arising are $a_1\{a_2\{a_3\{\ldots.$

$$a_1\left\{\begin{matrix}a_2\{a_4\{a_5\ldots. \text{ etc., etc.}\\a_3\end{matrix}\right.$$

The essentially different types of a hexagon are

$$4,\ 3\{1,\ 2\{1\{1,\ 2\left\{\begin{matrix}1\\1\end{matrix}\right.,\ 1\{1\{1\{1,\ 1\left\{\begin{matrix}1\\1,\ 2\{2.\\1\end{matrix}\right.$$

4



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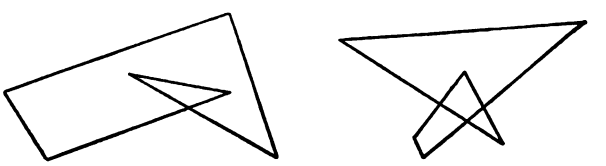
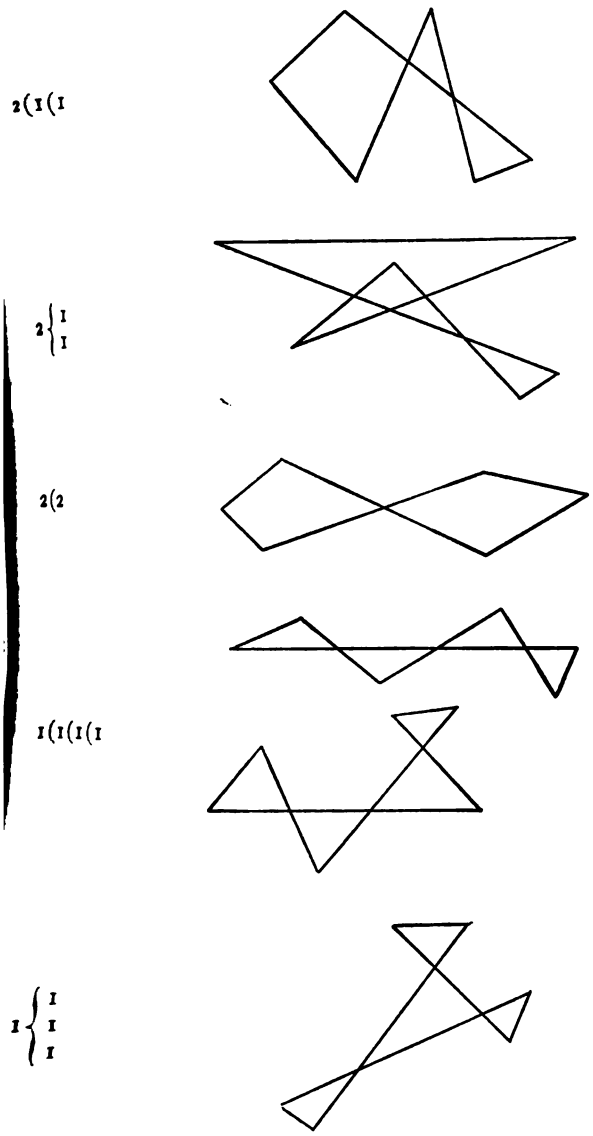




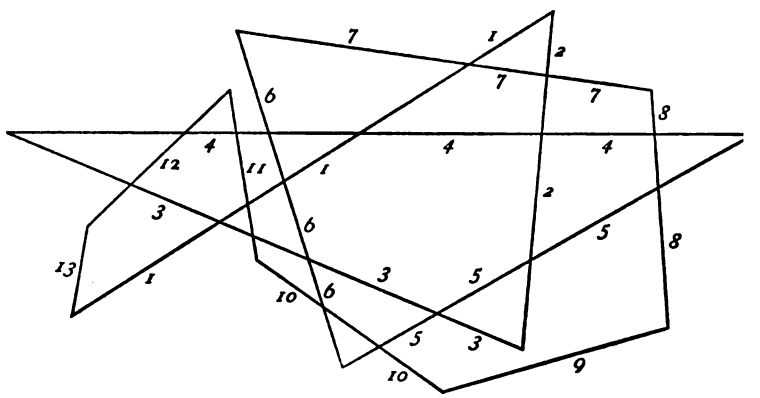
There are many sub-species arising out of choice of angles to join at, angles salient or re-entrant, and sides longer or shorter, so as to affect the mutual sections of sides.

But this is the first rating.

A paper on these polygons might be written without a dia-

gram: leaving every one to draw his own diagrams by the foll ing symbolic description.

Let 1, 2, 3, etc., be the sides of a polygon; in order and tween m and $m+1$ write all the sides which $m+1$ cuts, of lo name. Thus 1, 2_1, 3, 4 is a tetragon in which 3 cuts 1.



This polygon might be recovered by the description

$$1\ 2_1\ 3_{12}\ 4_{23}\ 5_{31}\ 6_{12}\ 7_{45}\ 8\ 9_{56}\ 10_{814}\ 11_{48}\ 12\ 13.$$

What symbols are possible and what impossible, I do not kn You are just the man to find out. Yours very truly,

A. DE MORGAN.

91 Adelaide Road, May 14, 1865.

DEAR SYLVESTER:

I am glad to hear that you think the theorem n-true. H Newton got it, I never can venture to imagine. He was a v *plodding* man: quite capable of constructing an equation to 20th degree by given roots, and trying the theorem upon it.

Newton used to try numerical values upon series, by way verification, and said he should be ashamed to say how far he h gone in this way, and how much time he had spent.

Airy told me—when I was an undergraduate—that no dem stration ever persuaded him that $x - \frac{x^3}{2\cdot3} + \frac{x^5}{2\cdot3\cdot4\cdot5} - \ldots$ w

periodic in value, until he tried it upon numbers of some value, as $x = 10$. Yours very truly, A. De Morgan.

* * *

Myself loving De Morgan and feasting on his books, especially his deliciously witty *Budget of Paradoxes*, I naturally asked Sylvester for *his* judgment. He answered me in an epigram:

"De Morgan did not write mathematics;
He wrote *about* mathematics!"

George Bruce Halsted.

Austin, Texas.

ON PSYCHOLOGY AND METAPHYSICS.[1]

BEING THE PHILOSOPHICAL FRAGMENTS OF BERNHARD RIEMANN.

Nec mea dona tibi studio disperta fideli
Intellecta prius quam sint, contemta relinquas.
Lucretius.

WITH every simple act of thinking, something permanent, substantial, enters our soul. This substantial somewhat appears to us as a unit but (in so far as it is the expression of something extended in space and time) it seems to contain an inner manifoldness; I therefore name it "mind-mass." All thinking is, accordingly, formation of new mind-masses.

Mind-masses entering the soul appear to us as ideas, the quality of the latter depending on the inner state of the former.

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[1] Translated by C. J. Keyser from Bernhard Riemann's *Gesammelte Mathematische Werke.*

Editors' Note.—The profound purely scientific significance of Riemann's work in pure mathematics and mathematical physics has been long since recognised, and time is more and more disclosing the great philosophical import of portions of that same work, as, for example, of the famous *Habilitationschrift* on "The Hypotheses that Form the Foundations of Geometry." Riemann was indeed distinctly a *philosophical* mathematician. *Grundlage* (the foundations of things), more than anything else, fascinated his marvellous genius, and his greatest work was exploration among the *roots* of knowledge.

These "Fragments" contain all that Riemann has left us of his direct speculation in psychology and metaphysics. They are a rough and incomplete record of his thought, but for boldness and vigor they resemble very much some of his scientific productions. Some of his profoundest ideas have certainly not been duly exploited. In their German dress, they are to many people practically inaccessible, and to bring them more fully before the thinking public has been our purpose in presenting them to the English reader.

The psychological ideas which Riemann has here set forth bear clearly the im-

Forming mind-masses amalgamate, combine or compound themselves in definite degree, partly with each other, partly with older mind-masses. The manner and strength of these combinations depend on conditions which are but imperfectly recognised by Herbart and which I shall complete in the following. They depend chiefly upon the inner relationship of the mind-masses.

The soul is a compact of mind-masses combined in a most intimate and manifold manner. It grows constantly by accession of mind-masses, and upon these depend its development.

Mind-masses, once formed, are imperishable, their combinations are indissoluble; only the relative strength of these combinations is altered by the incoming of new mind-masses.

Mind-masses require for their continued existence no material support and produce upon the physical world no abiding effect. They stand, therefore, in no relation to any part of matter and have, accordingly, no position in space.

On the other hand every entrance, every nascence, every formation, of new mind-masses and all combinations of them require a material agent or support. All thinking occurs therefore in a definite place.

(Not the retention of our experience, it is only the thinking that strains; and the force expended, so far as we can estimate this, is proportional to the mental activity).

Every entering mind-mass excites all related mind-masses and this excitation is the more powerful the more insignificant the diversity of their inner states (quality).

This excitation is not restricted merely to the related mind-masses but extends itself mediately also to those cohering with them

---

press of the thought of his place and period, which was predominantly Herbartian, and of his own special mathematical and mechanical proclivities. Some readers may find the study of these pages difficult and perhaps even unprofitable. For like Riemann's purely philosophical ideas, which were influenced by Fechner, his psychology will, at least in its terminology, be found to be at variance in many points with the views and tendencies of the time. They have, however, a quite independent significance as throwing light upon Riemann's own intellectual development, and thus, apart from whatever intrinsic merit they may possess, form a valuable page in the history of the development of thought.

(i. e., to those combined with them in earlier processes of thought). If, therefore, part of the related mind-masses hang together among themselves, then these are not only immediately excited but also mediately and consequently in proportion more powerfully than the rest.

The reciprocal action of two simultaneously forming mind-masses is conditioned by a material process (*Vorgang*) between the places where the two are forming. Likewise from material causes all forming mind-masses enter into immediate reciprocal action with those formed just before; but all older mind-masses cohering with the latter are excited mediately to action and in measure so much the less the looser this coherence and the weaker the bond of union among themselves.

The simplest and most common manifestation of the activity of older mind-masses is Reproduction, which consists in the striving of the active mind-mass to engender one similar to itself. The formation of new mind-masses is based upon the common action partly of older mind-masses, partly of material causes, and these common agents are hindered or helped by the inner dissimilarity or similarity of the mind-masses they strive to generate.

* * *

The form of the forming mind-mass (or the quality of the idea accompanying its formation) depends on the relative motion-form of the matter in which it is constructed, so that similar motion-forms of the matter condition similar forms of the mind-masses formed in it; and, conversely, like forms of mind-mass presuppose like forms of motion of the matter in which they have been formed.

All mind-masses simultaneously forming (in our cerebrospinal system) combine in consequence of a physical (chemico-electric) process between the places where they are forming.

Every mind-mass strives to produce a like-formed mind-mass and, accordingly, strives to produce that form of motion of the matter by which it was formed.

* * *

The assumption of a soul as a unitary support of the permanent somewhat (the ideas) which is produced by the separate acts of the

soul-life is based (1) on the intimate coherence and the reciprocal interpenetration of all ideas. In order, however, to explain the combination of a definite new idea with others, the assumption of a unitary support is not alone sufficient; much more, the cause on account of which the idea enters into just these definite combinations, in this definite strength, must be sought in the idea with which it combines. But the assumption of a unitary support of all ideas in addition to these causes is superfluous.

We now apply these laws of mental processes, to which the explanation of our own inner consciousness leads, to explain the order and adaptation observed on the earth, i. e., to explain Being and historical development.

In order to explain our soul-life we had to assume that the mind-masses generated in our nerve-processes continue as parts of our soul, that their inner coherence persists unchanged and that they are subject to variation only in so far as they enter into combination with other mind-masses.

An immediate consequence of these principles of explanation is that the souls of organic beings, i. e., the compacts of mind-masses, arisen during life, continue to exist after death. (Their isolated persistence is not sufficient). But in order to explain the orderly development of organic nature in which the earlier collected experiences obviously serve as basis for the later creations, it is necessary to assume that these mind-masses enter into a greater compact of mind-masses, the Earth-Soul, and that these serve a higher soul-life according to the same laws as the mind-masses engendered in our nerve-processes observe in their service of our own soul-life.

As, for example, at the sight of a red surface the mind-masses, begotten in a multitude of distinct primitive fibers, combine into one single compact mind-mass, which appears at the same instant in our thought, so the mind-masses engendered in the different individuals in a plant-genus which from a climatically little diversified region of the earth enters into the earth-soul, combine into a single whole expression (*Gesammteindruck*). As the different sense-perceptions of the same object unite in our soul into one single

picture of the object, so will all plants of a given region of the earth give to the earth-soul a most minutely elaborated picture of the climatic and chemical conditions of such region. In this way it is made plain how from the earliest life of the earth the order and plan of later creations developed.

According to our principles of explanation the persistence of existing mind-masses requires no material support, but all combinations of them, at least all combinations of different varieties of mind-masses, can take place only by means of new mind-masses engendered in a common nerve-process.

For reasons that will be unfolded later, the substratum of mental activity must be sought only in ponderable matter.

Now it is indeed impossible to refer the rigid earth-crust and all ponderable masses above it to a common mental process, but the motions of these masses must be explained from other causes.

Accordingly there remains only the assumption that the ponderable masses within the rigid earth-crust are supporters of the soul-life of the earth.

Are they adapted to this end? What are the external conditions for the possibility of life? The common experiences relating to such life-processes as are accessible to observation must form the basis in this investigation; but only within the limit of our ability to explain them are we able to draw thence conclusions likewise applicable to other regions of phenomena.

The general experiences concerning the outer conditions of the process of life within the circuit of phenomena accessible to us, are:

1. The more highly and completely developed the life-process, the more the supporters of the latter require protection against outer disturbances tending to alter the relative position of the parts.

2. The known physical processes (*Stoffwechsel*) that serve as means to the thought-processes, are:

a. The absorption of elastic fluids by liquids.

b. Endosmosis.

c. The formation and resolution of chemical combinations.

d. Galvanic currents.

3. Organic matter has no discernible crystalline structure; it is partly solid (slightly brittle), partly gelatinous, partly liquids or elastic fluids but always porous, i. e., notably penetrable by elastic fluids.

4. Among the chemical elements only the four so-called organic elements are general supporters of the life-process, and of these, again, entirely definite combinations, the so-called organising combinations, are compound parts of the organic body (protein, cellulose, etc.).

5. Organic combinations persist only up to a definite upper limit of temperature, and only down to a certain lower limit can they be supporters of the life-process.

Changes in the relative position of the parts are effected in greater degree by mechanical forces, in less degree by variations of temperature, in still less degree by rays of light; accordingly, we may arrange the facts which together constitute our theorem, as follows:

1. The ability of the lower organisms to propagate by division. The gradually decreasing reproductive power in case of the higher animal organisms.

2. The parts of plants are the more sensitive to change of temperature, the intenser and the more highly developed the life-process in them. In the higher animal organisms, particularly in the most important parts, there prevails an almost constant temperature.

3. The parts of the nervous system that serve as seats for independent activity of thought, are protected as much as possible against all these influences.

The fact first stated is obviously grounded in this, viz., the relative position of the parts can be the more readily determined by processes within the matter, the less it can be determined by external circumstances. This freedom from external circumstances is found however within the earth's crust in far higher degree than has been attained by organic contrivances outside the crust.

Among the following facts, which we consider collectively, those grouped under (4) and (5) appear to contradict our assump-

tion; they would do so in fact, if an absolute validity were assignable to the conditions we perceive for the possibility of a life-process and not merely a relative validity for our own circle of experience. Against the ascription to them of absolute validity there lie, however, the following objections:

1. In that case the whole of nature, with the single exception of the earth's surface, would have to be regarded as dead, for on all other heavenly bodies there prevail conditions of heat and temperature under which organic combinations could not exist.

2. It is absurd to assume that upon the rigid earth-crust the organic originated from the inorganic. In order to explain the nascence of the lowest organisms on the earth-crust, one must assume an already existing organising principle or a thought-process, under conditions that would render organic combinations impossible. We must accordingly assume that these conditions are valid only for the life-process in the actual state of the earth's surface, and only so far as we can explain them may we estimate the possibility of life-processes under other conditions.

Why then are only the four organic elements general supporters of the life-process? The reason can be sought only in properties by which these four elements are distinguished from the rest.

1. Such a common property of these four elements is found herein, that of all stuffs they and their combinations are condensed with greatest difficulty and in fact up to the present time, even not at all.

2. Another common property of these elements is the great multiplicity of their combinations and their easy resolubility. This property might be as well the consequence as the cause of their appropriation to the life-processes.

That, however, the former property, difficulty of condensation, makes the four elements peculiarly fit to serve life-processes, is already partly explained immediately from the actual conditions of the life-process, that are grouped under (2) and (3), but yet more if we seek to assign to their causes the phenomena of condensation of gases to liquids and solids.

Zend-Avesta, a truly life-giving word[1] creating new life in knowledge as in faith! For how many a thought, which, once mighty indeed in the development of man, preserved in us through tradition only, all at once now rises again out of its seeming death, in purer form to new life, disclosing new life in nature! For how immeasurably unfolds before our eyes the life of nature, which hitherto manifested itself only on the surface of the earth, how unspeakably sublimer does it now appear than formerly! What was considered as the seat of mindless unconscious forces appears now as the workshop of the highest spiritual activity. In wondrous fashion is fulfilled what our great poet in prophetic trance depicted as the goal that hovered before the mind of the investigator.

As Fechner in his *Nanna* sought to show that plants have souls, so the point of departure of his contemplations in the *Zend-Avesta* is the doctrine that the stars have souls. The method he employs is not that of the abstraction of general laws by induction and the application and testing of these in the explanation of nature, it is analogy. He compares the earth with our own organism, which we know to be endowed with a soul. He searches out not merely in a one-sided way the similarities, but does equal justice to the dissimilarities, too, and so arrives at the conclusion that all the former show the earth to be a being with a soul, and that all the latter indicate that it is a being with a soul far higher than our own.

The convincing power of this representation lies in its all-sided elaboration in detail. The total impression of the picture unfolded before us of the life of the earth must tend to justify the view and supply what the single conclusions lack in rigor. This evidence rests essentially upon the intuitive apprehensibility of the picture, upon its exceeding susceptibility of being executed in detail. I should accordingly deem it unjust to Fechner's view, should I endeavor to give by extracts an account of his procedure. In the following discussion of Fechner's views I will abstract from the form in which they are presented and fix attention on their substance only, and will rely on the former method, that of the abstraction

[1] Cf. Fechner, *Zend-Avesta*, I, Preface.

of general laws by induction and their verification in the explanation of nature.

Let us ask first: Whence do we conclude that a thing has a soul (the occurrence in it of a persistent unitary thought-process)? Of our own possession of a soul we are immediately certain; in case of others (men and animals) we infer such possession from individual purpose-serving movements.

Wherever we trace well ordered adaptation of means to ends back to a cause, we seek this cause in a thought-process; we have no other explanation. But thinking itself I at least can regard as only a process in the interior of ponderable matter. The impossibility of explaining thinking as motion of matter in space is clear to every one after an unbiased analysis of the inner consciousness; yet the abstract possibility of such an explanation may be here conceded.

That adaptation of means to ends is observed upon the earth, no one will deny. Accordingly the question arises, where ought we to locate the thought-process which is the cause of this adaptation? We are here concerned only with conditioned ends (i. e., such as are restricted to limited times and spaces); unconditioned ends find their explanation in an eternal will (not engendered in a thought process). The only adaptation of means to ends, whose cause we perceive, is the adaptation of our own actions. It rises out of the willing of the end and reflection upon the means.

If now we find a body consisting of ponderable matter with a completely closed system of permanent end-and-means-combinations, then we may assume for the explanation of this adaptation an enduring thought-process in the same; and this hypothesis will be most probable if (1) the adaptations are not in parts of the body already closed, and (2) if no reason exists for seeking the cause of the adaptation in a greater whole to which the body belongs.

If we apply this to the adaptation observed in men, animals and plants, it results that one part of this adaptation is explained from a thought-process in the interior of these bodies, that another part, however, the adaptation of the organism, by a thought-process in a greater whole.

The grounds hereof are:

1. The adaptation of organic arrangements is not closed in the single organisms. The reasons for the arrangement of the human organism are obviously to be sought in the character of the whole surface of the earth, which includes organic nature.

2. Organic movements repeat themselves innumerably, partly in different contemporaneous individuals, partly in the life of one individual or of a family succession.

3. The organic arrangements receive on the one hand (i. e., in case of man and animals) in the life of the single individuals, and on the other (i. e., in case of plants and embryos) in the life of the single species, no continuous development. The cause of their adaptation is accordingly not to be sought in a simultaneously progressing thought-process.

After abstracting from these (organic) adaptations, there remains now in case of man and animals as is well known, and, according to Fechner's view, in case of plants, still a closed system of variable end-and-means interlocking relations (*in einander greifender veränderlicher Zweck- und Wirkungsbezüge*); and this adaptation is to be explained from a unitary thought-process in them. These consequences of our principles are confirmed by our inner consciousness. According to the same principles we must seek the cause of the adaptations observed in organisms in a unitary thought-process in the earth on the following grounds:

a. The end-and-means-relationship in the organic life of the earth does not break up into separate systems but is all comprehended in one. Accordingly it cannot be explained from several separate and distinct thought-processes in parts of the earth.

b. There is within the limits of our experience no reason to seek the causes of these adaptations in a greater whole. All organisms are designed only for life upon the earth. The state of the earth's crust accordingly contains all (external) reasons of its arrangement.

c. They are peculiar (individual). According to all that experience teaches we must assume that they are not repeated on other heavenly bodies.

d. Neither do they last during the life of the earth but ra in the course of this life there constantly appear new and more c plete organisms. We must accordingly seek the cause in a thou process simultaneously progressing to higher order.

From the standpoint of exact natural science, of the expl tion of nature from causes, the assumption of an earth-soul is acc ingly an hypothesis for the explanation of Being and of the torical development of the organic world.

"When the body of the lower soul dies," says Fechner, ' higher soul takes it up out of its life of contemplation into its li reminiscence." The souls of perished creatures shall, theref form the elements of the soul-life of the earth.

The different thought-processes seem to differ chiefly in res to their temporal rhythm. If plants have souls, then hours days must be for them what seconds are for us. The correspon period for the earth-soul, at least for its outward activity, poss embraces many thousands of years. So far as the historical re lection of man extends, all movements of the earth-crust are t explained from mechanical laws.

ANTINOMIES.

Thesis.	*Antithesis.*
Finite, Representable.	Infinite, System of Notions lyi the limit of the representable.
I.	
Finite elements of Space and Time.	Continuity.
II.	
Freedom, i. e., not the power absolutely to originate, but to pass judgment between two or more given possibilities.	Determinism.
In order that decision by arbitrary power may be possible in spite of completely definite laws of the action of ideas, one must assume that the psychic mechanism itself has, or at least in its development acquires, the peculiar property of inducing the necessity of these laws.	No one can, in case of affairs, don the conviction that the future determined by his transactions.

III.

A God working in Time. (Government of the world).

A timeless, personal, omniscient, almighty, all-benevolent God (Providence).

IV.

Immortality.

A thing in and by itself endowed with transcendental freedom, radical evil, intelligible character and lying at the basis of our temporal appearance.

Freedom is very well compatible with sound lawfulness of the course of nature. But the concept of a timeless God is then untenable. But the restriction which omnipotence and omniscience suffer through freedom of the creature in the sense above determined, must be eliminated by the assumption of a temporally acting God, of a ruler of the hearts and destinies of men; the concept of Providence must be supplemented and in part replaced by the notion of government of the world.

GENERAL RELATION OF THE CONCEPT SYSTEM OF THESIS AND ANTITHESIS.

The method applied by Newton to the grounding of the Infinitesimal Calculus, and which since the beginning of this century has been recognised by the best mathematicians as the only one that furnishes sure results, is the method of limits. The method consists in this, viz., instead of considering a continuous transition from one value of a quantity to another, from one position to another, or, speaking generally, from one determination of a concept to another, one considers in the first place a transition through a finite number of intervals and then allows the number of these intervals to increase so that the distances of two successive points of division all decrease infinitely.

The concept-systems of antithesis are concepts that are indeed thoroughly determined by negative predicates but are not positively representable.

Just because a precise and complete representation of these concept-systems is impossible, they are inaccessible to direct investigation and elaboration by our reflection. They may, however, be regarded as lying at the limit of the representable, i. e., we can form a concept-system lying within the representable, which passes over into the given system by simple change of magnitude ratio. By abstracting from the ratios of the quantities, the concept-system remains unchanged in case of transition to the limit. At the limit itself, however, some of the correlative concepts of the system lose their susceptibility of being represented, and those, indeed, that mediate the relation between other concepts.

THEORY OF KNOWLEDGE; OR, AN ATTEMPT AT A DOCTRINE OF THE GROUND-NOTIONS OF MATHEMATICS AND PHYSICS AS FOUNDATION FOR THE EXPLANATION OF NATURE.

Natural science is the attempt to comprehend nature by precise concepts.

According to the concepts by which we comprehend nature not only are observations completed at every instant but also future observations are pre-determined as necessary, or, in so far as the concept-system is not quite adequate therefor, they are predetermined as probable; these concepts determine what is "possible" (accordingly also what is "necessary," or the opposite of which is impossible), and the degree of the possibility ("the probability") of every separate event that is possible according to them, can be mathematically determined, if the event is sufficiently precise.

If what is necessary or probable according to these concepts occurs, then the latter are thereby confirmed and upon this confirmation by experience rests our confidence in them. If, however, something happens which according to them is not expected and which is therefore according to them impossible or improbable, then arises the problem so to complete them, or if necessary, to transform them, that according to the completed or ameliorated concept-system, what is observed ceases to be impossible or improbable. The completion or amelioration of the concept-system forms the "explanation" of the unexpected observation. By this process our

comprehension of nature becomes gradually always more complete and assured, but at the same time recedes even farther behind the surface of phenomena.

The history of the illuminating natural sciences, as far as we are able to trace it back, shows that this is in fact the way in which our knowledge of nature advances. The concept-systems on which these sciences are now based arose by gradual transformation of older concept-systems, and the reasons which incited to new modes of explanation may be always traced back to contradictions or improbabilities that emerged in the older modes of explanation.

The formation of new concepts, so far as it is accessible to observation, occurs therefore by that process.

Now it has been proved by Herbart that also those concepts serving to comprehend the world, whose origin we are unable to trace either in history or in our own development because of their imperceptible transmission to us along with speech, may all be derived from this source, in so far as they are more than mere forms of combinations of simple sensuous ideas, and that accordingly they need not be derived (as according to the Kantian categories) from a peculiar constitution of the inner soul, anterior to all experience.

This proof of their origin in the comprehension of what is given by sense-perception is therefore important for us because *only thereby their significance can be established in a manner adequate for natural science.*

* * *

After the notion of things existing for themselves (*für sich bestehender Dinge*) has been formed, reflexion upon change, which contradicts the notion of existence for self, gives rise to the problem to maintain as far as possible this already proved notion. Out of this rises at the same time the notions of continuous change and of causality.

Only transition of a thing out of one state into another, without a leap being perceived, is observed. By way of supplementation, we may assume either that the transition occurs by a very great but finite number of imperceptible leaps or that the thing

passes over from the one state into the other through all intervals. The strongest reason for the latter conception lies in the necessity of maintaining as much as possible the already established notion of things existing for themselves. It is indeed impossible actually to imagine a transition through all intervals, a fact however, as already observed, that, taken narrowly, holds of all concepts.

According to the earlier formed and experientially proved notions of the existence of things, for themselves, it is concluded that a thing would remain what it is, were nothing else added. Herein lies the incitement to seek a cause for every change.

1. When is our conception of the world correct?

"When the coherence of our ideas corresponds to the coherence of things."

The elements of our picture of the world are entirely different from the corresponding elements of the depicted real. The former are something within us; the latter something without. But the combinations of the elements in the picture must coincide with those of the elements in the depicted, if the picture is to be true. The truthfulness of the picture is independent of its niceness; neither does it depend on the question, whether the elements of the picture represent greater or smaller masses of the elements of the real. But the combinations must correspond to each other; an immediate effect of two elements upon each other must not be assumed in the picture, where in reality only mediate effect occurs. In this case the picture were false and in need of correction; if, on the other hand, an element of the picture is replaced by a group of finer elements, so that its properties result partly from simpler properties of the finer elements, partly also from their combinations, and become accordingly in part intelligible, then thereby is indeed increased our insight into the coherence of things, without, however, the earlier conception being declared false.

2. From what shall the coherence of things be found?

'From the coherence of phenomena."

The idea of sense-things in definite space and time relations is what is found by intentional reflection upon nature or what is *given* for such. As is well known, however, the *quality* of the characters

of sense-things, color, sound, tone, smell, taste, heat or cold, is something merely taken from our sensation, something not existing outside of us.

That by which the coherence of things must be known is accordingly quantitative relations, the space and time relation of sense-things and the intensity relations of the characters and their qualitative differences.

Knowledge of the coherence of things must result from reflection upon the observed coherence of these magnitudinal relations.

CAUSALITY.

1. What an agent strives to effect must be determined by the concept or idea of the agent, its action can depend on nothing else than its own nature (*Wesen*).

2. This requirement is satisfied when the agent strives to preserve or to restore itself.

3. Such an action is, however, not thinkable if the agent is a thing, a being (*Seiendes*), but only if it is a state or relation. If a striving to preserve or to restore something occurs, then also deviations from this something must be possible and indeed in different degrees; and in so far as this striving is opposed by other strivings the preservation or restoration is at most only approximate. But there are no degrees of being, a gradual difference of only states or relations being thinkable. Accordingly, if an agent strives to preserve or to restore itself, then it must be a state or relation.

4. Such an action of a state, it is self-evident, takes place only upon such things as are capable of a like state. Upon which of these things, however, it takes place and whether it takes place at all cannot be inferred from the idea (*Begriff*) of the agent.[1]

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[1] These propositions are valid only if the action (*Wirken*) is to be ascribed to a simple real cause (*Realgrund*).

If two things *a* and *b* by an external cause enter into combination, then a consequence *c* may be attached either to the combination, the state itself of being combined, or indeed to the change of their ranks. The simplest assumption is that the consequence *c* is attached to the state of being combined.

It is unnecessary to extend these considerations further. Their principle con-

Kant has rightly observed that by the resolution of the concept of a thing we can find neither that it exists nor that it is the cause of something else, and accordingly that the concepts of being and causality are not analytical but can be derived only from *experience.* When however he later feels himself obliged to assume that the notion of causality originates in a pre-experiential property of the cognising subject and therefore stamps it a mere rule of time-series, by which, in experience, with each observation as cause *any other* could be connected as effect, then is the child thrown out with the bath. (Indeed, we must derive the relations of causality from experience; but we must not fail to correct and to complete our conception of these facts of experience by reflection.)

The word hypothesis has now a somewhat different significance from that given it by Newton. We are now accustomed to understand by hypothesis all thoughts connected with the phenomena.

Newton was far from the crude thought that explanation of phenomena could be attained by abstraction.)

Newton: *Et haec de deo; de quo utique ex phaenomenis disserere ad philosophiam experimentalem pertinet. Rationem vero harum Gravitatis proprietatum ex phaenomenis nondum potui deducere, et Hypotheses non fingo. Quicquid enim ex Phaenomenis non deducitur, Hypothesis vocanda est.*

Arago, *Œuvres complètes*, T. 3, 505, says: *Une fois, une seule fois Laplace s'élanca dans la region des conjectures. Sa conception ne fut alors rien moins qu'une cosmogonie.*

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sists herein that we hold fast the law: "What an agent strives to effect must be determined by the idea of the agent," but that we do not apply this law as did Leibnitz or Spinoza to beings with a manifoldness of determinations but to real causes of the greatest possible simplicity.

We are accustomed in German to translate *actio* as well as *effectus* by effect (*Wirkung*). As the word occurs most frequently in the latter sense, there easily arises an obscurity when we use it for *actio*, as for example, in case of the usual translation of "*actio aequalis est reactioni*," "*principium actionis minimæ.*" Kant sought to avoid the difficulty by adding in parenthesis beside effect, mutual action (*Wirkung, Wechselwirkung*) the Latin expression *actio, actio mutua*. We might venture to say: "Force is equal to the opposite force." "Law of least force expenditure." Since however we have in fact no simple expression for *agere*, an effort directed upon something else, we may be permitted to make use of foreign words.

Laplace to a question by Napoleon, why in his *Mécanique céleste* the name of God did not appear: *Sire, je n'avais pas besoin de cette hypothèse.*

The distinction which Newton makes between laws of motion or axioms and hypotheses seems to me untenable. The law of inertia is the hypothesis: If a material point were alone in the world and moved in space with a definite velocity, it would preserve this velocity constantly.

ACVAGHOSHA, THE FIRST ADVOCATE OF THE MAHÂYÂNA BUDDHISM.

AÇVAGHOSHA, the first expounder of the Mahâyânistic doctrine and one of the deepest thinkers among the Buddhist patriarchs, is known to most Western Buddhist scholars simply as the author of the Buddha-caritakâvya,[1] the famous poem on the life of Buddha. The accounts of his life and of the significance of his philosophy are so few that the important influence exercised by him upon the development of the Mahâyâna Buddhism has been left almost entirely unnoticed. That he was one of the most eminent leaders among earlier Buddhists; that he was in some way or other connected with the third convocation in Kashmir, probably presided over by the Bhikshu Parçva; that he had a wonderful poetical genius which rendered great service in the propagation of Buddhism,—these facts sum up almost all the knowledge possessed by scholars about Açvaghosha. The reason why he is not known as he ought to be, is principally that the Sanskrit sources are extremely meagre, while the accounts obtainable from Chinese and Tibetan traditions are confusing and full of legends.

This fact has led Professor Kern to say that Açvaghosha was not an historical man, but a personification of Kâla, a form of Çiva.[2] But the sources from which the Professor draws his con-

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[1] *The Sacred Books of the East*, Vol. XLIX. Beal's English translation of the Chinese translation "The Fo sho hing tsan king," *S. B. E.*, Vol. XIX.

[2] *Der Buddhismus und seine Geschichte in Indien*, authorised German translation, Leipsic, 1884, Vol. II., p. 464.

clusion are rather too meagre and I fear are not worth serious consideration. In the following pages we shall see by what traditions Açvaghosha's life is known to the Buddhists of the East.

DATE.

Let us first decide the date, which varies according to different authorities from three hundred to six hundred years after the Parinirvâna of Buddha.

1. The *Li tai san pao chi* (*fas.* 1),[1] quoting the Record of the Sarvâstivâdin school, says: "Açvaghosha Bodhisattva was born a Brahman in Eastern India some three hundred years after the Nirvâna. After he abandoned his worldly life, he refuted all the doctrines held by the *tîrthakas* (heathen),[2] and writing the Mahâalamkâra-çâstra[3] in several hundred verses (*gâthâs*) greatly propagated the teachings of Buddha."

2. Hui-yuen[4] states in his commentary (*fas.* 1) on the Mahâprajñâ-pâramitâ-çâstra,[5] on the authority of Kumârajîva 鳩摩羅什 (A. D. 339–413), that Açvaghosha flourished about three hundred and seventy years after the Nirvâna.

3. In the *Life of Vasubandhu*,[6] Açvaghosha is mentioned as a contemporary of Kâtyâyana who is said in the same book to have been living in the fifth century after the Nirvâna.

4. The writer[7] of the preface to the second Chinese translation

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[1] 歷代三寶記 (*Records of the Triratna under Successive Dynasties*), compiled by 費長房 Fe Chang-fang, A. D. 597; 15 *fasciculi*.

[2] Tîrthaka, which literally means "ascetics," was first applied to a definite sect, viz., the naked ascetics of the Jains, but was later on extended to all dissenters and has therefore been translated "heretics or heathen." The Chinese translation of the term literally means "[followers of a doctrine] other than Buddhism."

[3] Translated into Chinese by Kumârajîva, circa A. D. 405. 15 *fasciculi*.

[4] 慧遠 A. D. 333–416. The leader of the *Pai lien she* (White Lotus Society), first Sukhâvatî sect movement in China.

[5] *Treatise on the Great Wisdom-Perfection*, by Nâgârjuna. A Chinese translation by Kumârajîva, A. D. 402–405. 100 *fasciculi*.

[6] The original Sanskrit author is unknown. The present Chinese translation is by Paramârtha who came to China from Western India A. D. 546.

[7] The writer's name is not mentioned there, nor the date; but judging from the knowledge he shows in treating the subject, as we shall see later, he must have been living either at the time of this second translation or immediately after it.

of the Mahâyâna-çraddhotpâda-çâstra[1] says that this Çâstra "is the deepest of the Mahâyâna texts. Five hundred years after the Nirvâna, Açvaghosha appeared in the world. He was numbered among the four suns [of Buddhists] and his teachings stood most prominently [among the doctrines prevailing] in the five countries of India."

5. Sang-ying[2] states in his preface to the Chinese translation of the Mahâprajñâpâramitâçâstra that Açvaghosha appeared towards the end of the period of Orthodoxy, i. e., five hundred years after the Nirvâna.

6. The *Fu tsou t'ung chi*[3] (Vol. V.) says that it was the fulfilment of the Tathâgata's prophecy that six hundred years after the Nirvâna the Dharma was transmitted to Açvaghosha.

7. This six hundred year prophecy is adopted as if it were an unquestionable fact, by Fa-tsang,[4] a learned commentator of the Çraddhotpâdaçâstra (*Discourse on the Awakening of Faith*).

8. Chih-k'ai 智愷 who was the copyist for Paramârtha when he translated the Çraddhotpâdaçâstra, also adheres to the six hundred year tradition in his preface to the book just mentioned, saying that some six hundred years after the Nirvâna of the Tathâgata, many devilish heretical leaders clamorously protested their false doctrines against the good law of Buddha, when a Çrâmana of very high virtue called Açvaghosha, thoroughly versed in the philosophy of the Mahâyâna Buddhism and highly compassionate for those ignorant people, wrote this Discourse (the Çraddhotpâdaçâstra), in order that he might increase the brilliancy of the Triratna, etc., etc.

9. The six hundred year tradition is very popular among Chinese and Japanese Buddhists. The *Fa tsu li tai tung tsai*[5] (*fas.* 5) also follows it.

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[1] *Discourse on the Awakening of Faith in the Mahâyâna*, the principal work of Açvaghosha.

[2] 僧敭 A. D. 362–439. One of the four famous disciples of Kumârajîva.

[3] 佛祖統記 A history of Buddhism, compiled by Chih-p'an 志磐, a Chinese priest, during the latter half of the thirteenth century. 54 *fasciculi*.

[4] 643–712. A most prominent leader of the Avatamsaka sect in China.

[5] 佛祖歷代通載 *A History of Buddha and the Patriarchs through Successive Dynasties*, by Nien chang 念常, A. D. 1333. 36 *fasciculi*.

10. The prophecy above referred to (see No. 8), which is doubtless a later invention, appears in the Mahâmâyâ sûtra[1] (*fasciculi* 2) as follows:

"After the death of Buddha, Mahâmâyâ asked Ânanda if Buddha had ever told him in his life anything concerning the future of Buddhism. Responding to this, Ânanda said: 'I heard one time Buddha say this with regard to the future decline of Buddhism: "After the Nirvâna Mahâkâçyapa with Ânanda will compile the Dharma-piṭaka, and when it is settled Mahâkâçyapa will enter into a Nirodha-samâpatti in the *Lang chi shan* [i. e., Mount of Wolf's Track, Kukkurapadagiri], and I (Ânanda) too obtaining the fruit of enlightenment will in turn enter into Parinirvâna, when the right doctrine will be transmitted to Upagupta who will in an excellent manner teach the essence of the Dharma. . . . When five hundred years are passed [after Buddha's death] a Bhikshu named Pao-tien (Ratnadeva?) will in an excellent manner teach the essence of the Dharma, converting twenty-thousand people and causing all sentient beings in the eight creations to awaken the Anuttara-samyaksambodhicitta (most-perfect-knowledge-mind). The right doctrine will then go to decline. When six hundred years [after Buddha's death] are expired, ninety different schools of the *tîrthakas* will arise and proclaiming false doctrines, each will struggle against the other to destroy the law of Buddha. Then a Bhikshu, Açvaghosha by name, will in an excellent manner teach the essence of the Dharma and defeat all the followers of the *tîrthakas*. When seven hundred years [after Buddha's death] are expired, a Bhikshu, Nâgârjuna by name, will in an excellent manner teach the essence of the Dharma, destroying the banner of false philosophy and lighting the torch of the right doctrine."'". . . .

11. Referring to the statement of the above mentioned Sûtra, Nâgârjuna a famous Buddhist philosopher who wrote a commentary on Açvaghosha's work, called Çraddhotpâdaçâstra, claims that

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[1] The Sûtra is also called the "Sûtra on Buddha's Ascent to the Trayastrimsa Heaven, to Teach the Dharma to His Mother." 2 fasciculi. A second Chinese translation by Shih T'an-ching 釋曇景 of the Ch'i dynasty 齊 (A. D. 479–502). His nationality and life both are unknown.

there were six Açvaghoshas at different times, to fulfil the prophecy of Buddha and that the author of the book on which he writes a commentary[1] was one who appeared on earth according to the proph-

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[1] The Sanscritised title is the Mahâyânaçâstravyâkhyâ, translated into Chinese by Pa-ti-mo-to 筏提摩多, an Indian priest, A. D. 401–2. 10 *fasciculi*. The statements in full run as follows:

"In all there were six Açvaghoshas, owing to different predictions in the sûtras; each of them appeared to fulfil his mission according to the necessity of the time and there is no contradiction in them."

The author then proceeds to make particular references to those sûtras:

"When we examine all different predictions in the sûtras taught by Buddha through his whole life, we find six different [personages all called Açvaghosha]. What are those six? (1) According to the 大乘本法契經 *Tai ch'êng pên fa ch'i ching* (Mahâyânapûrvadharmasûtra?), we have the following: When the peerless, great, enlightened, honored one was speaking about his intention of entering into Nirvâna, Açvaghosha rising from the seat knelt down, saluted Buddha's feet, and respectively joining his hands together turned towards Buddha, the world-honored one, and said this in verse: 'The peerless one whose heart is filled with great love and whose immeasurable virtues have been accumulated through æons which are like a boundless ocean, the Buddha, only on account of love and compassion for all sentient beings, now speaks about his entering into Nirvâna, and I and all the other members of the Saṃgha feel an unspeakable despair, utterly confused in mind and spirit. If even the world-honored one full of great love, is going to another world, leaving his own children behind him, why then could not I who am not yet full of love and compassion go to another world following Buddha's steps? Who can blame me?' When finished uttering these words, Açvaghosha gazed at the pupil of Buddha's eye and gradually passed out of life. (2) The 變化功德契經 *Pien 'hua kung tê ch'i ching* (Vikriyâpuṇyasûtra?) says: Then the Bhagavat said to Açvaghosha: 'Three hundred years after my Nirvâna thou shalt obtain an inspiration from me and with various methods (upâya) benefit and make happy all beings in coming generations. When thou dost not have any inspiration from me, thou canst not do this by thyself.' (3) The 摩訶摩耶契經 Mahâmâyâsûtra says as follows: 'When six hundred years are passed after the disappearance of the Tathâgata, ninety-six different schools of the *tîrthakas* will arise, and professing false doctrines, each will struggle against the other to destroy the law of Buddha. A Bhikshu called Açvaghosha, however, will in an excellent manner proclaim the essence of the Dharma and defeat all followers of the *tîrthakas*. (4) In the 常德三昧契經 *Ch'ang tê san mei ch'i ching* (Sûtra on the Samâdhi of Eternal Merit) we read: In the eight-hundredth year after the Nirvâna there will be a wise man, Açvaghosha by name. Among the followers of the *tîrthakas* as well as those of Buddhism, he will refute all those who cherish heretical views and will establish the Dharma taught by Buddha. (5) In the 摩尼清淨契經 *Mo ni ch'ing ching ch'i ching* (Maṇivimâlasûtra?) is said thus: About one hundred years after the Nirvâna of Buddha Açvaghosha Mahâsattva will appear on earth, protect the right doctrine and safely hoist the banner of Buddhism. (6) In the 勝頂王契經 *Shêng ting wang ch'i ching* (Çrimûrdharâjasûtra?) is said thus: On the seventeenth day after the enlightenment of Buddha there was a *tîrthaka* called 迦羅諾鳩尸摩

ecy in the Mahâmâyâ-sûtra. Nâgârjuna even states that he was a disciple of Açvaghosha, but the work itself is regarded as spurious, on account of some obvious contradictions, though the followers of the Mantra sect (*Shingonshyu*) insist on its genuineness because they are anxious to have an ancient authority for their own mystic doctrines, which are here supported.

Deeply absorbed in metaphysical speculation, the inhabitants of India paid very little attention to history, and whenever we endeavor to ascertain the date of important historical figures, we are sure to find our way to certainty barred. So we cannot decide which of the conflicting traditions above enumerated is to be considered as authentic. When taken independently of other historical events which are connected with them and whose dates have been already fixed, they have no value whatever. Besides it should be observed, the chronology of Buddha, to which every one of the traditions makes reference, is as yet unsettled and must have been still more so at the time when those traditions were current in India as well as in China. If they differed as to the date of Buddha, they might have maintained the same date for Açvaghosha; no one can tell. We have to seek a light from another source.

Another group of traditions centering around Açvaghosha is his connexion with a most powerful king of *Yüeh chih* 月氏國, who established his extensive kingdom in North-Western India. Who was this king? In the 雜寶藏經 *Tsa pao tsang ching* (Samyuktaratnapiṭaka-

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Chia-lo-no-chiu-shih-to (Kâlanakshiṭa?), who transforming himself into the figure of a great *nâgarâja* (i. e., snake-king) with 86,000 heads and 86,000 tongues, simultaneously proposed 86,000 contradicting questions and asked the Tathâgata [for the solution]. He then gave him a triple answer explaining all those paradoxes. The *nâgarâja* then proposed tenfold questions again asking the Tathâgata [for their solution] to which he gave a hundredfold answer and explained their paradoxes. When this dialogue came to an end, Buddha said to the *nâgarâja*: 'Very good, very good, O Açvaghosha Çrâmana! in order to guard the castle of the Dharma, thou hast assumed this form of destruction, establishing the doctrine of Buddha. Be patient, be patient, always discipline thyself in this way, always behave thyself in this way, do not go round in a small circle, but make a universal tour.' The *nâgarâja* then abandoning his assumed beast-form revealed his own real character and approaching the peerless, honored one and saluting him said rejoicingly in verse, etc., etc. This is the sixth Açvaghosha."

sûtra?)[1] *fas.* 7 we read: "A king of Tukhâra, Candana Kanishṭha (or Kanîta? Chinese 旃檀扇呢吒 *chan-tan-chi-ni-ch'a*) had a close friendship with three wise men: the first one was a Bodhisattva, called Açvaghosha; the second, a minister of state called Mo-cha-lo (Maṭhara or Maḍara?); the third, an experienced physician called Chê-lo-chia (Caraka). With these three the king was on most intimate terms and treated them with the utmost cordiality, permitting them to approach his person. Açvaghosha said [one day] to him that if he [the king] would follow his advice, he would obtain in his coming life everything that was good, eternally put an end to all his misfortunes and forever be free from evil." . . . .[3]

Açvaghosha's relation with King Candana Kanishṭha (or Kanîta? Chinese *Chi-ni-ch'a*) is told also in the *Fu fa tsang yin yüan ch'uan*,[4] *fas.* 5:

"[At that time] the king of Tukhâra was very powerful. He was called Candana Kanishṭha (or Kanîta?, Chinese *Chi-ni-ch'a*). Being very ambitious and bold, and far superior in courage to all his contemporaries, every country he invaded was sure to be trampled down under his feet. So when he advanced his four armies

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[1] *Sûtra on the Casket of Miscellaneous Jewels.* The original Sanskrit author is unknown. Translated into Chinese by Chi-chia-yeh (吉迦夜 Kimkara?) of the Western country and T'an-yao 曇曜, A. D. 472. 8 *fasciculi.* The original text is said to have existed at the time when the *Chêng-yüan* catalogue 貞元錄 was compiled (A. D. 785–804) by Yüan-chao 圓照, a Buddhist priest of the Tang 唐 dynasty (A. D. 618–907).

[2] Does Kanishṭha, which literally means "youngest," refer to the youngest of the three brothers who successively governed the Tukhâra district of India? If so, there is no question about the identity of him and King Kanishka.

[3] The *Fu fa tsang ch'uan* ("Transmission of the Dharmapiṭaka," *fas.* 5) also seems to refer to the same tradition, for it is stated that when a king of Tukhâra (probably, Kanishka) was very much afflicted on account of his having committed many atrocious deeds in the war with Parthia (Eastern Persia), Açvaghosha told him that if he would follow the Dharma with a sincere heart, his sin would gradually be attenuated; and also that the same king had a physician called Caraka "who thoroughly understood pharmacy and who was clever, learned, intelligent, elegant, meek and compassionate," etc.

[4] 付法藏因緣傳 "Accounts Relating to the Transmission of the Dharmapiṭaka." 6 *fasciculi.* The original Sanskrit author is unknown. The third Chinese translation now existent is by Chi-chia-yeh (Kimkara?) of the Western country, A. D. 472. The original text is said to have been existing when the *Chêng yüan* catalogue (A. D. 785–804) was compiled.

towards Pâṭaliputra (*Hua shih ch'êng* in Chinese), the latter was doomed to defeat in spite of some desperate engagements. The king demanded an indemnity of 900,000,000 gold pieces, for which the defeated king offered Açvaghosha, the Buddha-bowl and a compassionate fowl, each being considered worth 300,000,000 gold pieces. The Bodhisattva Açvaghosha had intellectual powers inferior to none; the Buddha-bowl having been carried by the Tathâgata himself is full of merits; the fowl being of compassionate nature would not drink any water with worms in it,—thus all these having merits enough to keep off all enemies, they are on that account worth 900,000,000 gold pieces.[1] The king [of Tukhâra] was greatly pleased at receiving them and immediately withdrawing his army from the land went back to his own kingdom."

We have the same legend stated in a brief biography[2] of Açvaghosha as follows:

"After that a king of the smaller *Yüeh chih* country (i. e., Tukhâra) in North India invaded the Middle country (i. e., Magadha). When the besieging had continued for some time, the king of Central India sent a message [to the invader] saying: 'If there be anything you want, I will supply it; do not disturb the peace of my people by thus long staying here,' to which this reply was given: 'If you really ask a surrender, send me 300,000,000 gold pieces; I will release you.' The [besieged] king said: 'Even this entire kingdom cannot produce 100,000,000 gold pieces, how can I supply you with 300,000,000?' The answer was: 'There are in your country two great treasures, (1) the Buddha-bowl,[3] (2) a Bhikshu of wonderful talent (i. e., Açvaghosha). Give them to

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[1] This is a comical feature of the legend, for if these treasures could ward off all enemies why did they not protect the unfortunate king of Pâtaliputra against Kanishtha?

[2] *Life of Açvaghosha* 馬鳴菩薩傳, translated into Chinese by Kumârajîva. Very short. The author is unknown. The original Sanskrit text is stated in the *Chêng yüan* catalogue to have been existing at that time. Cf. *Wassiljew's Buddhismus*, German ed., p. 231 et seq.

[3] Fa-hien 法顯 states Kanishka (which is transliterated by him into Chinese *Chi-ni-chia* 罽膩迦, corresponding to Sanskrit Kanika) as if a different person from the king of *Yüeh chih* who invaded Gandhâra to get the Buddha-bowl. *Vide* Legge's translation of *Fa-hien* pp. 33 and 34.

me, they are worth 300,000,000 gold pieces.' The [besieged] king said: 'Those two treasures are what I most revere, I cannot give them up.' Thereupon the Bhikshu said to the king in explanation of the Dharma:

"'All sentient beings are everywhere the same, while Buddhism, deep and comprehensive, aims at universal salvation, and the highest virtue of a great man consists in delivering [all] beings. As our temporal administration is very liable to meet obstructions even your rule does not extend itself outside of this one kingdom. If you on the other hand propose a wide propagation of Buddhism, you would naturally be a *Dharmarâja* over the four oceans. The duty of a Bhikshu is to save [all] the people and not to give preference to one or the other. Merits lie in our heart; truth makes no distinction. Pray be far-sighted, and do not think only of the present.'

"The king who was from the first a great admirer of him, respectfully followed his advice and delivered him to the king of *Yüeh chih* who returned with him to his own kingdom."

Comparing all these traditions, we are naturally led to the conclusion that Açvaghosha, who was numbered as one of the four suns[1] of Buddhism, must have had a very powerful influence over the spiritual India of the time, that the king who wished to have him as a spiritual adviser must have been a very devoted Buddhist so as to accept a Bhikshu instead of an enormous sum of money, and that such a devoted Buddhist king, ruling over the vast domain which extended from the bank of the Indus towards the lower Ganges, must have been living sometime between the third and sixth century after the Nirvâna, whatever the authentic date of Buddha might be. The next conclusion we can advance therefore will be the identification of this king who is called Candana Kanishṭha or Kanîta in the above stories, with Kanishka,[2] the originator of the third Buddhist convocation in Kashmir.

As to the difference of the name, we have to say this. While

[1] Hsüen-tsang's 玄奘, *Records of Western Countries*, Beal's English translation, Vol. II., p. 302.

[2] A. D. 85–106, according to M. Müller.

Hsüen-tsang's transliteration for Kanishka is *Chia-ni-shê-chia* 迦膩色迦 which is quite an approximate reproduction of the original sounds, the Chinese method of transliteration before his time by the so-called "old translators" was rather irregular, loose and therefore often misleading. Add to this the liability to error on the part of local dialects, and we do not improperly identify *Chi-ni-ch'a*, with Kanishka, while the former may be Sanskritised Kanishṭha or Kanîta.[1]

In further support of this view, we quote from the *Journal of the Buddhist Text Society*, Vol. I., Part 3, an article on King Kanishka, taken from a Tibetan source, which bears a more historical appearance than the legends above referred to. The abstract is:

"Kanishka, king of Palhâva and Delhi,[2] was born four hundred years after the Nirvâna. When he learned that Simha, king of Kashmir, abandoned the worldly life to become a Buddhist priest under the name of Sudarçana and obtained Arhatship, he went to Kashmir and heard a sermon delivered by Sudarçana.[3] At that

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[1] One objection to identifying Chi-ni-ch'a 膩吒 (Kanishṭha or Kanîta) with Kanishka 迦膩色迦 is a single Chinese character appearing in the Mahâlamkâraçâstra ("Book of Great Glory"), the work ascribed to Açvaghosha. In *fas.* 3 as well as *fas.* 6 of the same book referring to Candana Kanishṭha or Kanîta, the writer says: "我昔嘗聞昨檀膩吒 *Wo hsi ch'ang wên, chan-t'an chi-ni-chê zvang*," i. e., "I heard of old that King Chandana Kanishṭha," etc. (in *fas.* 6., *Chia-ni-ch'a*), etc., etc. The Chinese character *hsi* usually means "of yore" or "in olden times," but it also signifies the past indefinitely, near as well as distant. If we thus understand the term in the sense of "some time ago," or simply "once," there will be no difficulty in demonstrating that Açvaghosha was an elder contemporary of Kanishka, though we cannot apparently accept the Chinese tradition which says they were intimately known to each other. Because in that case Açvaghosha would not refer to the king in such a hearsay manner as stated in the book above mentioned. Taking all in all, this does not prevent us asserting that they were contemporaneous.

[2] Cf. A. Schiefner's German translation of Târanâtha's *History of Buddhism*, p. 89: "Nachdem König Çrîtschandra die Herrschaft ausgeübt hatte, waren viele Jahre vergangen, als im Westen im Lande *Tili* und *Mälava* ein an Jahren junger König Kanika in die Herrschaft gewählt wurde."

[3] Târanâtha's statement differs from this. According to him Kanika and Kanishka are not the same king, the former being that of Tili and Mâlava, while the latter that of Jâlamdhara. *Vide* pp. 58 and 90. Târanâtha might have confused them.

time a Mahâyâna priest who kept a most prominent position northern countries was called Açvaghosha. His influence in spiritual world was as incomparable as the temporal power Kanishka who conquered Kashmir and Jâlamdhara. The king s a message to Açvaghosha to come to his kingdom, who, howev owing to his old age, could not accept the invitation, but sent h a leading disciple of his called Jñânayaça, accompanied with a l ter treating the essential points of Buddhism."[1]

Though the Tibetan tradition considerably differs in many spects from the Chinese accounts above mentioned, they both ag in this point that Açvaghosha and Kanishka had some intercour or that at least they were contemporaneous and known to ea other. So we may take it as an established fact that Açvaghosl the author of the 大乘起信論 Mahâyâna-çraddhotpâda-çâstra (*L course on the Awakening of Faith in the Mahâyâna*), was living at t time of Kanishka.[2]

I do not think there is any need here to enumerate all differ opinions about the time of Kanishka, which has been already a proximately fixed by the untiring investigation of European schola such as Princep, Lassen, Cunningham, Wilson, Fergusson, M Müller, and others.[3] So long as our present aim is to assign the ti of Açvaghosha more definitely than stating vaguely some three five hundred years after the Nirvâna of Buddha, suffice it to s that he lived at the time extending from the latter half of the fi century before Christ to about 50 or 80 A. D. If we fix the date Buddha's death in the fifth century before Christ, Açvaghos must be said to have lived mostly during the six hundredth y

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[1] Târanâtha also states this event (*Geschichte des Buddhismus*, p. 92). the king is not Kanishka, but Kanika; and the name of the disciple is not Jñâ yaça, but *Dschnânakriya*.

[2] A further corroboration of this view will be met with when we treat later of the conversion of Açvaghosha by Parçva or his disciple Puṇyayaças.

[3] Max Müller's opinion, as stated before, is that Kanishka lived A. D. 85–1 Lassen thinks the Gondopharean dynasty was succeeded by Kanishka, king of *Yüeh chih*, about one hundred years before Christ; Princep places his reign d ing the first century A. D.; Cunningham thinks his consecration was 58 A. Fergusson, 79 A. D.; Rhys Davids, about 10 A. D., etc.

after the Nirvâna. At the very most his time cannot be placed later than the first century of the Christian era.

I have spared no pains, even at the risk of tediousness, in gathering all the information obtainable from Chinese sources relative to the date of Açvaghosha, because this date is of paramount importance when we enter into the discussion of the development of the Mahâyâna Buddhism, which is commonly and erroneously considered to be the sole work of Nâgârjuna.

NATIVITY AND PEREGRINATION.

There is not so much discordance in the traditions about the wanderings of Açvaghosha as about his date, though indeed we do not have as yet any means of ascertaining his birth-place, other than the statements of discordant authorities. According to Târanâtha,[1] he was a son of a rich Brahman called Samghaguhya who married the tenth and youngest daughter of a merchant in Khorta. As a youth, when thoroughly familiar with every department of knowledge, he went to Odiviça, Gaura, Tîrahuti, Kâmarûpa, and some other places, defeating everywhere his Buddhist opponents by his ingenious logic.

All these places are situated in Eastern India, and among the Chinese traditions the "Record of the Triratna" (*Li tai san pao chi*) as well as the "Accounts of Buddha and the Patriarchs" (*Fo tsu tung chi*) agree with Târanâtha in placing Açvaghosha's native land in the East; but the *Life of Vasubandhu* makes Açvaghosha a native of Bhâshita in Çrâvastî, while in Nâgârjuna's work, the Mahâyânaçâstravyâkhyâ 釋摩訶衍論 (*Shih mo ho yen lun*), he is mentioned as having been born in Western India, Loka being the father and Ghoṇâ the mother. The "Record of Buddha and the Patriarchs Under Successive Dynasties" (*Fo tsu li tai t'ung tsai*) agrees with neither of the above statements, for it says (*fas.* 5): "The twelfth patriarch, Açvaghosha Mahâsattva (the great man), was a native of Vârâṇasî." A further contradicting tradition is pointed out by Prof. S. Murakami in one of his articles on the history of Buddhism,[2]

[1] *Geschichte des Buddhismus*, p. 90.

[2] The *Bukkyó Shirin*, Vol. I., No. 6. 1894. Tokyo, Japan.

quoting the *Shittanzó* 悉曇藏 (*fas.* 1), which makes Açvaghosha a man of South India.

A majority of the traditions place his native country in East India; but there is no means of confirming these. One thing, however, seems to be certain, namely, that Açvaghosha was not born in the northern part of India, which place is supposed by most Western Buddhist scholars to be the cradle of the Mahâyâna school.

Wherever the native country of Açvaghosha may have been, both the Chinese and Tibetan records agree that he made a journey to Central India, or Magadha. It seems that every intellectual man in India, the people of which, living in affluence, were not occupied with the cares of making a living, sought to gain renown by dialectics and subtle reasonings, and Açvaghosha, as a Brahman whose "intellectual acquirements were wonderfully deep," and whose "penetrating insight was matchless,"[1] could not resist the temptation. Not satisfied with his intellectual campaign against commonplace Buddhists in his neighborhood, who were crushed down as "rotten wood before a raging hurricane,"[2] he went, according to a Chinese tradition, to Pâṭaliputra, and according to the Tibetan, to Nâlanda. The *Life of Açvaghosha* evidently refers to this fact when it states that Pârçva, the eleventh patriarch and eventual teacher of Açvaghosha, on being informed of the paramount influence of the Brahman *tîrthaka* (i. e., Açvaghosha) in Central India and of the fact that his conquest over Buddhists had silenced the bell (*ghanta*) in some monastery (*vihâra*), journeyed from Northern India to convert the bitterest opponent into a faithful follower of Buddha. He adds that Açvaghosha left his home and lived henceforth in Central India. But according to the "Transmission of the Dharmapitaka" (*Fu fa tsang ch'uan, fas.* 5) we find Açvaghosha even after his conversion still in Pâtaliputra, from which he was taken by King Kanishka to the latter's own capital, Gandhâra, in the Northwest of India.

[1] The "Transmission of the Dharmapitaka" (*Fu fa tsang ch'uan, fas.* 5).

[2] The same as above.

Thus all that we can say about the birth-place and wandering of Açvaghosha is: (1) he was a Brahman by birth either of South, or of West, or of East, but not of North India; (2) he acquired in Central India his highest reputation as a Brahman disputant, and, after his conversion, as the greatest Buddha-follower of the time, intellectually as well as morally; (3) his later life was spent according to the Chinese authority in the North where he wrote probably the Mahâlamkâra-sûtraçâstra ("Book of Great Glory") which describes matters mostly relating to Western India.

APPELLATIONS.

The author of the Mahâyânaçraddhotpâdaçâstra ("Discourse on the Awakening of Faith in the Mahâyâna") is most commonly known in the Chinese Buddhist literature by the name of Açvaghosha. But according to his *Life* he was also called Kung-tê-jih 功德日 (i. e., merit-sun; in Sanskrit, Puṇyaditya?). For he was not only a philosopher, but a preacher and an organiser, for "while in North India he widely propagated the doctrine of Buddha, led and benefited the masses, and through good and excellent [missionary] methods perfected the merits of the people." The *Record of Buddha and the Patriarchs* (*Fo tsou t'ung tsai*), where it is stated that his other name was Kung-chang 功勝 (Puṇyaçrîka?), can be said almost to agree with the above. While thus no other name or appelation of his is known in China, Târanâtha mentions nine more names: Kâla (Time), Durdarsha (Hard-to-be-seen), Durdarsha-kâla (Hard-to-be-seen-time), Mâtṛceta (Mother-child), Pitṛceta (Father-child), Çûra (Hero), Dharmika-Subhûti (Virtuous-Mighty), and Maticitra (Intelligence-bright).[1]

In I-tsing's "Correspondence from the South Sea" (*Nan hai chi kwei ch'uan*,[2] Chap. 32, "On Chanting"), the name Mâtṛceta is mentioned, but I-tsing does not identify him with Açvaghosha, though the legend attached to the former closely resembles that of the lat-

[1] *Geschichte des Buddhismus*, p. 90.

[2] 南海寄歸傳 by I-tsing 義淨 who left China A. D. 671 for a pilgrimage to India and came back A. D. 695. The book is a work on the *vinaya* as observed by the Sarvâstivâdin, which the pilgrim witnessed in India as well as in Ceylon. An English translation by J. Takakusu, London.

ter told in Târanâtha. Târanâtha states that when Açvaghosha became a *sthavira* and advocate of the Tripitaka, he had a dream one night in which the venerable Târâ gave him the instruction to write hymns on Buddha for the expiation of his former sinful deeds; that according to this admonition he wrote many hymns praising the virtues of Buddha, amongst which one containing one hundred and fifty çlokas[1] is the best of all; that the hymns composed by him are full of benediction like the very words of Buddha, because he was predicted by the Blessed One to be a hymnist.[2]

Compare the above with this from I-tsing:

"The venerable Mâtṛceta (Mother-child) was a man of great intellect, of excellent virtue, eminently standing above all sages in India. A tradition says that when Buddha was taking a walk one time with his kinsmen, disciples, and many other people, a nightingale (?), observing his personal feature as elegant and majestic as a gold mountain, uttered in the wood some pleasant, harmonious notes that sounded like praising the virtues of Buddha. Buddha then turning towards the disciples said: 'The bird overcome by the joy of seeing me utters a pitiful cry. By this merit it will after my death obtain a human form, Mâtṛceta 摩咥哩制吒 by name, and praise and adore my intrinsic virtues with a number of hymns.' This man first followed the doctrine of a *tîrthaka* worshipping Maheçvara[3] and composed many hymns to adore him. But in the meantime he came across his own name recorded [in a Buddhist writing]; inspired by this, he took refuge in Buddha, changed his garb, abandoned his laymanship, and in many ways praised, honored and adored Buddha. Regretting his misbehavior in the past and desiring to perform good deeds in the future and also lamenting the unfortunate fate that prevented him from having a personal interview with the Great Teacher rather than bowing before his bequeathed image, he at last decided with all his rhetorical talent and

[1] Schiefner notes: "Çatapantschâçatika nâma stotra, Tandjur B. 1, unter den Stotra's."

[2] *Geschichte des Buddhismus*, p. 91.

[3] Cf. the following statement in Târanâtha, p. 90: "Als er (Açvaghosha) in den Mantra- und Tantra-Formeln und in der Dialektik sehr bewandert wurde, gab ihm Maheçvara selbst Anleitung."

in solemn fulfilment of the Lord's prophecy, to praise his virtues and merits [in hymns]. He first composed four hundred çlokas (verses) and then one hundred and fifty çlokas;[1] all of which describe the six Pâramitâs [Perfections] and state the excellent virtues possessed by the World-Honored-One," etc.

At the end of the same Chapter (i. e., Chap. 32) in I-tsing's Correspondence he refers to Açvaghosha and Nâgârjuna both of whom composed some beautiful and popular hymns that were sung by Buddhists throughout India at the time of his pilgrimage. But if the Tibetan statement is reliable, I-tsing may have been mistaken in recording Açvaghosha and Mâtṛceta as different characters. The Tibetan and Chinese version of the one hundred and fifty çloka hymn being still existent, the comparison of which, however, I have not yet been able to make, will furnish an interesting testimony for the identification.

Many legendary explanations have been invented about the name of Açvaghosha, as might be expected of the imaginative Indian mind, but not being worth while quoting from the materials at my command, no reference will be made to them here.

CONVERSION.

A consensus of traditions both Tibetan and Chinese maintains that Açvaghosha was in his earlier life a most powerful adherent of Brahmanism, though we are tempted to discredit it on the ground that later Buddhist writers may have wished to exaggerate the superiority of Buddhism to all other Indian philosophical and religious doctrines, by chronicling the conversion of one of its strongest opponents to their side. Whatever the origin of the legend may be, how did his conversion take place? By whom was he converted? About these points the Tibetan and the Chinese tradition by no means agree, the one standing in a direct contradiction to the other. While the Tibetan account is full of mystery and irra-

[1] "Hymn of One Hundred and Fifty Çlokas" (Çatapañcâshad-buddhastotra), translated into Chinese by I-tsing during his stay in the Nâlanda-vihâra, Central India. At the time of the compilation of the *Chêng yüan* catalogue the original is said to have existed.

tionality, the Chinese is natural enough to convince us of its probable occurrence.

According to Târanâtha[1] Âryadeva, the most eminent disciple of Nâgârjuna, defeated and proselyted Açvaghosha,[2] not by his usual subtlety in dialectics, but by the superiority of his magical arts. Açvaghosha made use of every tantric formula he could command, in order to free himself from the enchantment in which he was held by his enemy, but all to no purpose whatever. Thus when he was in an utterly desperate condition, he happened to read the Buddhist Sûtra which was kept in his place of confinement and in which he found his destiny prophesied by Buddha,[3] he was seized with deep regrets for his former hostile attitude toward the Dharma, and immediately renouncing his tîrthakism, professed the doctrine of Çâkyamuni.

The Tibetan tradition presents some unmistakable indications of a later invention: the use of tantric formulæ, the so-called prophecy of the Tathâgata, and the anachronism of Âryadeva. On the other hand the Chinese records are worth crediting, though they are not unanimous as to how the conversion took place and who was the proselytist.

According to the *Life of Açvaghosha*, Parçva[4] was the man who converted him. They agreed at their first meeting that on the seventh day thence they should have the king, ministers, Çrâmanas, *tîrthakas* and all great teachers of the Dharma gathered in the *Vihâra* and have their discussion there before all those people. "In the sixth night the sthavira entered into a *samâdhi* and meditated on what he had to do [in the morning]. When the seventh day dawned, a great crowd was gathered like clouds. The Sthavira Parçva arrived first and ascended a high platform with an unusually pleasan

[1] *Geschichte des Buddhismus*, German translation by Schiefner, pp. 84–85.

[2] He is mentioned there by the name of Durdarshakâla.

[3] Cf. this with the accounts of Mâtṛceṭa-Açvaghosha told in I-tsing.

[4] The conversion of Açvaghosha by Parçva as here stated may be considered an addition to the proof already demonstrated for the contemporaneousness of Açvaghosha and King Kanishka; for Parçva, according to the Tibetan as well as the Chinese authority, was a co-operator at least, if not the president, of the third Buddhist convocation promoted by the king of Kashmir.

countenance. The *tîrthaka* [i. e., Açvaghosha] came later and took a seat opposite him. When he observed the çrâmana with a pleasant countenance and in good spirits, and when he also observed his whole attitude showing the manner of an able opponent, he thought: 'May he not be Bhikshu Chin? His mind is calm and pleasant, and besides he bears the manner of an able antagonist. We shall indeed have an excellent discussion to-day.'

"They then proposed the question how the defeated one should be punished. The *tîrthaka* (Açvaghosha) said: 'The defeated one shall have his tongue cut out.' The sthavira replied 'No, he shall become a disciple [of the winner] as the acknowledgement of defeat.' The *tîrthaka* then replied: 'Let it be so,' and asked, 'Who will begin the discussion?' The Sthavira Parçva said: 'I am more advanced in age; I came from afar for the purpose [of challenging you]; and moreover I was here this morning earlier than you. So it will be most natural for me to speak first.' The *tîrthaka* said: 'Let it be so. Following the subject of your argument I shall completely baffle you.'

"The Sthavira Parçva then said: 'What shall we have to do, in order to keep the kingdom in perfect peace, to have the king live long, to let the people enjoy abundance and prosperity, all free from evils and catastrophies?' The *tîrthaka* was silent, not knowing what to reply. As now according to the rule of discussion one who could not make a response is defeated, Açvaghosha was obliged to bow [before the opponent] as a disciple of his. He had his head shaved, was converted to a çrâmana, and instructed in the perfection-precepts.

"When he (Açvaghosha) was alone in his room, he was absorbed in gloomy, unpleasant reflexion as to why he, possessing a bright intellect and far-sighted discretion, and having his reputation widely spread all over the world, could be defeated with a single question and be made a disciple of another. Parçva well knew his mind and ordered him to come to his room where the master manifested himself in several supernatural transformations. Açvaghosha now fully recognised that his master was not a man of ordinary

type, and thus feeling happy and contented, thought it his duty to become one of his disciples.

"The master told him: 'Your intellect is bright enough, hard to find its equal; but it wants a final touch. If you study the doctrine I have mastered, attend to my capability and insight into the Bodhi, and if you become thoroughly versed in the method of discussion and clearly understand the principle of things, there will be no one who can match you in the whole world.'

"The master returned to his own country [North India]; the disciple remained in Central India, making an extensive study of the Sûtras, seeking a clear comprehension of the doctrine, Buddhistic as well as non-Buddhistic. His oratorical genius swept everything before him and he was reverentially honored by the four classes of the people, including the king of [Central] India who treated him as a man of distinction."

According to the "Transmission of the Dharmapiṭaka" (*Fu fa tsang chuan*), however, Açvaghosha was not converted by Parçva, but by his disciple and patriarchal successor, Puṇyayaças. Though the two works, *Life of Açvaghoska* and the book just mentioned differ in some other points, they are evidently two different versions of the one original legend. As the book is not as yet accessible to English readers, I here produce the whole matter translated from the Chinese version. The comparison will prove interesting.

"Full of a proud and arrogant spirit that speedily grew like a wild plant, he [Açvaghosha] firmly believed in the existence of an ego-entity and cherished the ultra-egotistic idea. Being informed that an *Âcârya* called Puṇyayaças, who, deep in knowledge and wide in learning, proclaimed that all things are relative [=*çûnya*, lit. empty], there is no *âtman*, no *pudgala*; Açvaghosha's arrogant spirit asserted itself, and presenting himself to Puṇyayaças challenged him saying: 'I confute all [false] opinions and doctrines in the world, as hailstones strike tender grass. If my declaration prove false and not true, I will have my own tongue cut out in acknowledgement of defeat.' Thereupon Puṇyayaças explained to him that Buddhism distinguishes two kinds of truth, that while 'practical truth' hypothetically admits the existence of an *âtman*, there is

nothing conditional in 'pure [or absolute] truth,' all being calm and tranquil, and that therefore we cannot prove the ego as an absolute entity.

"Açvaghosha would not yet surrender himself, because being over-confident of his own intellectual power, he considered himself to have gained the point. Puṇyayaças said: 'Carefully think of yourself; tell not a lie. We will see which of us has really won.'

"Açvaghosha meanwhile came to think that while 'practical truth' being only conditional has no reality at all, 'pure truth' is calm and tranquil in its nature, and that therefore these two forms of truth are all unobtainable, and that if they have thus no actuality (or existence?), how could they be refuted [as false]?[1] So feeling now the superiority of his opponent, he tried to cut out his tongue in acknowledgement of the defeat. But Puṇyayaças stopped him saying: 'We teach a doctrine of love and compassion, and do not demand that you cut out your tongue. Have your head shaved instead and be my disciple.' Açvaghosha thus converted was made a çrâmana by Puṇyayaças.

"But Açvaghosha who felt extremely ashamed of his [former] self-assumption was thinking of attempting his own life. Puṇyayaças, however, attaining arhatship, entered into a *samâdhi* and divined what was going on in the mind of Açvaghosha. He ordered him to go and bring some books out of the library. Açvaghosha said to the *Âcarya:* 'The room is perfectly dark; how can I get in there?' To this Puṇyayaças answered: 'Just go in, and I shall let you have light.' Then the *Âcarya* through his supernatural power stretched far into the room his right hand whose five fingers each radiating with light illuminated everything inside of the walls. Açvaghosha thought it a mental hallucination and knowing the fact that a hallucination as a rule disappears when one is conscious of it, he was surprised to see the light glowing more and more. He

[1] The reasoning is somehow unintelligible. The passages must be defective, and although I might venture to supply the necessary words to make them more logical and intelligible to the general reader who is not acquainted with the cûnyatâ philosophy, I have not tried to do so, thinking that it is enough here if we see in what the subject of the discussion consisted.

tried his magical arts to extinguish it till he felt utterly exhausted, for the mysterious light suffered no change whatever. Finally coming to realise that it was the work of no other person than his teacher, his spirit was filled with remorse, and he thenceforth applied himself diligently to religious discipline and never relapsed."[1]

The "Record of Buddha and the Patriarchs" (*Fo tsou tung tsai*) agrees with the "Transmission of the Dharmapiṭaka" (*Fu fa tsang chuan*) in making Puṇyayaças, instead of Parçva, the master of the conversion. But the former does not state how Açvaghosha was converted.

Though so far it remains an open question who was the real master of Açvaghosha, we can be sure of this, that he had intimate spiritual communication with both Parçva and Puṇyayaças. Parçva who was an older contemporary of Puṇyayaças, was probably already advanced in age when Açvaghosha came to be personally acquainted with him, and so he did not have time enough to lead the young promising disciple to a consummate understanding of the doctrine of Buddha. After the demise of this venerable old patriarch, Açvaghosha therefore had to go to Puṇyayaças for a further study of his religion, till he was capable of forming his own original thoughts, which are set forth in his principal work, the "Discourse of the Awakening of Faith" (Çraddhotpâda-Çâstra). This assumption is justified when we notice that Açvaghosha in the "Book of Great Glory" pays his homage to Parçva as well as to Puṇyayaças.

Now by way of a supplementary note to the above, let us say a word about Wassiljew's observation[2] which states that while Hînayânists or Çrâvakas ascribe the conversion of Açvaghosha to Parçva, the Mahâyânistic record says that Âryadeva converted him. This assertion is evidently incorrect, for the *Life of Açvaghosha* as well as the "Transmission of the Dharmapiṭaka" (*Fu fa tsang chuan*) in which the honor of his conversion is given to the successor of Parçva as aforesaid, do not certainly belong to the work of

[1] The "Transmission of the Dharmapiṭaka" (*Fu fa tsang chuan*), *fas.* 5.

[2] *Buddhismus*, German ed., p. 222, and also see Târanâtha, tr. by Schiefner, p. 311.

the Hînayâna school. It is the Tibetan tradition only, and not the general Mahâyânist statement that Âryadeva converted Açvaghosha, and there is no ground at all for the assertion of Wassiljew, which practically leads us to take everything Tibetan for Mahâyânistic and everything Chinese for Hînayânistic.

LISTS OF PATRIARCHS.

The incorrectness of the Tibetan story, as to the conversion of Açvaghosha by Âryadeva above referred to, is further shown by a list of the Buddhist patriarchs in India appearing in various Buddhist books either translated from Sanskrit into Chinese or compiled in China from sundry sources. In every one of them Açvaghosha is placed after Parçva or Puṇyayaças, and before both Nâgârjuna and Âryadeva, the most brilliant disciple of the former. The following list therefore as we noticed elsewhere will furnish

	THE FO TSU T'UNG TSAI	THE FO TSU T'UNG CHI	THE FU FA TSANG CHUAN	BUDDHABHADRA[1]	SARVASTI-VADIN
1	Mahâkâçyapa	Mahâkâçyapa	Mahâkâçyapa	Ânanda	Mahâkâçyapa
2	Ânanda	Ânanda	Ânanda	Madhyântika	Ânanda
3	Çaṇavâsa	Çaṇavâsa	Çanavâsa	Çaṇavâsa	Madhyântika
4	Upagupta	Upagupta	Upagupta	Upagupta	Çaṇavâsa
5	Dṛtaka	Dṛtaka	Dṛtaka	Kâtyâyana	Upagupta
6	Micchaka	Micchaka	Micchaka	Vasumitra	Maitreya
7	Vasumitra	Buddhanandi	Buddhanandi	Kṛshṇa	Kâtyâyana
8	Buddhânandi	Buddhamitra	Buddhamitra	Parçva	Vasumitra
9	Buddhamitra	Parçva	Parçva	Açvaghosha	Kṛshna
10	Parçva	Puṇyayaças	Puṇyayaças	Ghosha	Parçva
11	Puṇyayaças	Açvaghosha	Açvaghosha	. . . . .	Açvaghosha
12	Açvaghosha	Kapi	Kapimala		Kumârata
13	Kapimala	Nâgârjuna	Nâgârjuna		. . . . .
14	Nâgârjuna	Nâgârjuna	. . . . .		
15	Kanadeva (Âryadeva)	Kanadeva			
..	. . . . .	. . . . .			
34					Nâgârjuna
35					Deva
..					. . . . .

[1] He was a native of Kapilavastu and came to China A. D. 406. A translator of many Sanskrit works. His list belongs to the Sarvâstivâdin, though it is a little different from the succeeding one. The former contains fifty-four and the latter fifty-three patriarchs. See the *C'hu san tsang chi chi* 出三藏記集 by 僧祐 (Nanjo's Catalogue, No. 1476).

us good material for fixing the time of Açvaghosha. It does not make any practical difference whether he was converted by Parçva himself or his immediate successor and disciple Puṇyayaças, because it is most probable they all were contemporaneous. The list generally gives twenty-three or twenty-eight patriarchs beginning with Mahâkâçyapa, but not deeming it necessary to give a complete list, I have cut it short at Deva.

Chieh-sung[1] refutes in his *Chuan fa chang tsung lun* 傳法正宗論 (A Treatise on the Right Transmission of the Dharma) the authority of the "Transmission of the Dharmapitaka" (*Fu fa tsang chuan*) but he agrees with it down to the seventeenth patriarch. The principal point of his refutation is simply that Bodhidharma, the founder of the Chinese Dhyâna school, should be included in the list.

AS AN ARTIST.

We cannot conclude the accounts concerning Açvaghosha without mentioning an anecdote from a Chinese source.[2] The Çraddotpâdaçâstra ("The Awakening of Faith,") proves he was a philosopher of a high grade; the Buddhacaritakâvya ("The Life of Buddha") and the Mahâlamkaraçâstra ("The Book of Great Glory") reveal his poetical genius; and the following story indicates that he was a musician:[3]

"He [Açvaghosha] then went to Pâtaliputra for his propaganda-tour, where he composed an excellent tune called *Lai cha huo lo* (賴吒和囉 Râstavara?), that he might by this means convert the people of the city. Its melody was classical, mournful, and melodious, inducing the audience to ponder on the misery,

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[1] 智昇 a priest of the Dhyâna school who died A. D. 1071 or 1072. He wrote among other works one on the fundamental identicalness of Confucianism and Buddhism.

[2] The "Transmission of the Dharmapitaka" (*Fu fa tsang chuan, fas.* 5).

[3] The fact agrees well with Târanâtha's statement which in its German translation reads as follows: "Die von ihm verfassten Loblieder sind auch in allen Ländern verbreitet; da zuletzt Sänger und Possenreisser dieselben vortrugen und bei allen Menschen des Landes mit Macht Glauben an den Buddha entstand, so wuchs durch die Loblieder grösserer Nutzen zur Verbreitung der Lehre." *Geschichte des Buddhismus*, German tr., p. 91.

emptiness, and non-âtman-ness of life. That is to say, the music roused in the mind of the hearer the thought that all aggregates are visionary and subject to transformation; that the triple world is a jail and a bondage, with nothing enjoyable in it; that since royalty, nobility, and the exercise of supreme power, are all characterised with transitoriness, nothing can prevent their decline, which will be as sure as the dispersion of the clouds in the sky; that this corporeal existence is a sham, is as hollow as a plantain tree, is an enemy, a foe, one not to be intimately related with; and again that like a box in which a cobra is kept, it should never be cherished by anybody; that therefore all Buddhas denounce persons clinging to a corporeal existence. Thus explaining in detail the doctrine of the non-âtman and the *çûnyatâ*, Açvaghosha had the melody played by musicians, who, however, not being able to grasp the significance of the piece, failed to produce the intended tune and harmony. He then donned a white woolen dress, joined the band of musicians, beating the drum, ringing the bell, and tuning the lyre, and this done, the melody in full perfection gave a note at once mournful and soothing, so as to arouse in the mind of the audience the idea of the misery, emptiness, and non-âtman-ness of all things. The five hundred royal princes in the city thus moved all at once were fully awakened, and abhorring the curse of the five evil passions abandoned their worldly life and took refuge in the Bodhi. The king of Pâtaliputra was very much terrified by the event, thinking that if the people who listen to this music would abandon their homes [like the princes], his country would be depopulated and his royal business ruined. So he warned the people never to play this music hereafter."

WORKS IN CHINESE TRANSLATIONS.

The works ascribed to Açvaghosha and still existing in Chinese translations are eight in number. They are: (1) The 大乘起信論 *Tai shêng ch'i hsin lun* (Mahâyânaçraddhotpâdaçâstra): discourse on the awakening of faith in the Mahâyâna. It is the principal work of Açvaghosha, and through this we are able to recognise

what an important position he occupies in the development of the Mahâyânistic world-conception and theory of final emancipation. Its outlines and the accounts of its Chinese translation will be given below. (2) The 大宗地玄文本論 *Ta sung ti hsüan wên pên lun*, a fundamental treatise on the spiritual stages for reaching final deliverance. The book has a decided tendency to mysticism, explaining a gradual development of religious consciousness through fifty-one different spiritual stages. It may be considered a precursory work out of which Vajrabodhi's Mantrism finally made a full manifestation. It was translated by Paramârtha between A. D. 557–569. Twenty *fasciculi*, forty chapters. (3) The 大莊嚴論經 *Ta chuang yen lun ching* (Mahâlamkârasûtraçâstra), the Book of Great Glory, or a compilation of stories illustrating the retribution of karma. The stories relate mostly to the events that occurred in Western India. Beal translated some of them in his *Buddhist Literature in China*. The Chinese translator is Kumârajîva, *circa* A. D. 405. Fifteen *fasciculi*. (4) The 佛所行讚 *Fo shu hing tsan* (Buddhacaritakâvya), a well known poem on the life of Buddha. The Chinese translation is by Dharmaraksha between A. D. 414–421. Five *fasciculi*, twenty-eight chapters. Beal's English translation forms Vol. XIX. of *The Sacred Books of the East*; and Cowell's translation from Sanskrit, Vol. XLIX of the same. (5) The 尼乾子問無我義經 *Ni kan tsü wên wu wu i ching*, a sûtra on a Nirgrantha's asking about the theory of non-ego. The book foreshadows the Mâdhyamika philosophy of Nâgârjuna, for the two forms of truth are distinguished there, Pure truth (*Parmârtha-satya*) and Practical Truth (*Samvṛtti-satya*),[1] and the *Çûnyatâ* theory also is proclaimed. (6) The 十不善業道經 *Shih pu shan yeh tao ching*, a sûtra on the ten no-good deeds. (7) The 事師法五十頌 *Shih shih fa wu shih sung*, fifty verses on the rules of serving a master or teacher. (8) The *Lu tao lun 'hui ching*, a sûtra on transmigration through the six states of existence. These last four works are very short, all translated by Jih-ch'êng (Divayaças?), between A. D. 1004–1058.

[1] Notice Açvaghosha's discussion with Punyayaças as above mentioned.

CHINESE TRANSLATIONS OF THE "DISCOURSE ON THE AWAKENING OF FAITH."

Let us give here some remarks on the Chinese translations of Açvaghosha's, principal and best known work "The Awakening of Faith." The Sanskrit original is long lost, probably owing to the repeated persecutions of Buddhism by Chinese emperors at different times. According to the *Chêng yüan* catalogue 貞元錄 (compiled between A. D. 785–804) the Sanskrit text is said to have existed at that time. It is a great pity that such an important Buddhist philosophical work as the present çâstra can be studied only through translations.

There are two Chinese translations still existing in the tripiṭaka collection. The first translation was made by Paramârtha (波羅末陀), otherwise called Kulanâtha (拘羅那陀), of Ujjayana (or Ujjayini, modern Oujein) in Western India. He came to China A. D. 546 and died A. D. 569 when he was 71 years old. Among many other translations, the present one came from his pen on the tenth day of September, A. D. 554.

The second one is by Çikshânanda (實叉難陀), of Kusutana (Khoten), who began his work on the eighth of October, A. D. 700. He died in China A. D. 710 at the age of 59.

As to the problem whether the original of the two Chinese translations is the same or different, my impression is that they were not the same text, the one having been brought from Ujjayana and the other from Khoten. But the difference, as far as we can judge from the comparison of the two versions, is not fundamental.

In the preface to the second translation of the *Kao li* edition, the unknown writer states to the following effect: The present Çâstra has two translations. The first one is by Paramârtha and the second one is from the Sanskrit text brought by Çikshânanda who found also the older Sanskrit original in the *Tz'u an* tower. As soon as he had finished the rendering of the Avatamsakasûtra into Chinese, he began a translation of his own text with the assistance of several native Buddhist priests. The new translation occa-

sionally deviates from the older one, partly because each translator had his own views and partly because the texts themselves were not the same.

Though the *Chêng yüan* 貞元錄 as well as the *K'ai yüan*[1] 開元錄 catalogue affirm that the two translations were from the same text, this can only mean that they were not radically divergent. For if any two editions differ so slightly as not to affect the essential points, they can be said to be practically the same text.

Which of the two translations then is the more correct? To this question we cannot give any definite answer as the originals are missing. The first translation has found a more popular acceptance in Japan, and probably also in China, not because it is more faithful to the original, but because a most learned and illustrious Buddhist scholar called Fa tsang 法藏 (A. D. 643–712) wrote a commentary on it. And on that account the commentary is more studied than the text itself. Fa tsang assisted Çikshânanda in preparing the second translation, but he preferred the first one for his commentary work, partly because the first one had already found a wide circulation and some commentators before his time, and partly because both translations agreeing in all their important points, he did not like to show his "partiality," as a commentator on Fa tsang says, to the one in the preparation of which he himself took part.

OUTLINES OF THE "DISCOURSE ON THE AWAKENING OF FAITH."

I canot help saying a few words here about the importance of Açvaghosha's main work which is scarcely known in the West, and if so, wrongly. Even Samuel Beal who is considered one of the best authorities on Chinese Buddhism, makes a misleading reference to our author in his *Buddhism in China*. The following quotation from the same apparently shows that at least when he wrote it, 1884, he had a very insufficient knowledge of the subject. He says (p. 138):

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[1] A catalogue of Buddhist books collected in the K'ai yüan period (A. D. 713–741) of the Tung Dynasty, by 智昇 Chih-shang, A. D. 730. Its full name is "*K'ai yüan shih chiao lu.*" Twenty *fasciculi.*

"His (Açvaghosha's) writings still survive in a Chinese form, and when examined will probably be found to be much tinged by a pseudo-Christian element. . . . But there is one book, the *K'i-sin-lun*, or 'Treatise for Awakening Faith,' which has never yet been properly examined, but, so far as is known, is based on doctrines foreign to Buddhism and allied to a perverted form of Christian dogma."

Wassiljew, another of the highest Western authorities on the subject, seems to be entirely ignorant of the existence of the present work. It is very strange that those who are considered to be quite well acquainted with the development of the Mahâyânistic thought, do not place in the right light a prominent, if not the principal, actor, who, so far as is known to us, practically initiated this great spiritual and intellectual movement in India. Wassiljew says in his *Buddhismus* (pp. 83–84):

"Zu welcher besonderen Schule Açvaghosha gehörte, wird nicht mit Bestimmtheit überliefert: aus der Legende, nach welcher er sich bei der Abfassung der Vibhâshâ betheiligte, dürfen wir jedoch den Schluss ziehen, dass er zu den Repräsentanten der Vaibhâschika's gerechnet ward."

It is true that in the *Life of Vasubandhu* Açvaghosha is said to have taken part in the compilation of the Vibhâsâ, but it is of no account whatever in the face of the present book in which we can clearly trace almost all elements of the thought fully developed afterwards by Nâgârjuna and other later Mahâyâna representatives.

I wish here, in order to show the significance of Açvaghosha, to call the attention of the reader to the three most salient points in his doctrine which will distinguish him from all Hînayâna schools. The three points constituting the gist of this Çâstra then are: (1) the conception of suchness (*Bhûtatathatâ*); (2) the theory of the triple personality; (3) the salvation by faith or the Sukhâvati doctrine.

The conception of suchness assumes other names, namely, "The Womb of the Tathâgata" (*Thatâgatagarbha*), when considered from its embracing all possible merits, and the All-Conserving Mind (*Âlaya-vijñâna*), when it becomes the principle of evolution

and is said to have developed from the teaching of Buddha as ex pounded in the old canonical sutras, such as the *Lankâvatara* an the *Çrîmâla*. Whatever the origin of the idea of suchness might hav been, its "absolute aspect" evidently foreshadows the *Çûnyatâ* ph losophy of the Mâdhyamika school. It is very doubtful whethe Nâgârjuna, as told in a Chinese tradition, was a personal disciple o Açvaghosha, but it is highly probable that he was much influence by him in forming his system.

The second thesis, the theory of the triple personality, that i one of the most distinctive characteristics of the Mahâyâna Bud dhism, seems to have been first established by Açvaghosha. Th pantheistic idea of suchness (*Bhûtatathatâ*), and the religious con sciousness which always tends to demand something embodied i infinite love (*karunâ*) and infinite wisdom (*jñâna*), and thescientifi conception of the law of causation regulating our ethical as well a physical world, or in short the doctrine of karma,—these three fac tors working together in the mind of Açvaghosha culminated in hi theory of the triple personality.

The doctrine of salvation by faith whereon the Japanese *Shi Shyû* and *Jôdô Shyû* laid down their foundation also, appears firs in the present çâstra. If the quotation in the Mahâyâna-çraddho pâda actually refers to the Sukhâvati sûtras, as we may fairly as sume, there is a great probability in the statement that during th first four centuries after the Nirvâna there was already a variety o free interpretations about the teaching of the Master, which, com mingled with the other religio philosophical thoughts in Indi eventually made a full development under the generel names of th Mahâyâna and the Hînayâna schools.

A supplementary point to be noticed in Açvaghosha is th abundance of similar thoughts and passages with those in the Bh gavatgîta. The coincidence between the latter and the Saddharm puṇḍarîka has been pointed out by Kern in his *Buddhismus un seine Geschichte* (Vol. II., p. 500, footnote). While it is an ope question which of the two has an earlier date, the Mahâyâna Bu dhism as a whole must be permitted to have some common poin with the canonical book of Çivaism.

In conclusion I wish to state that as this book, the *Awakening of Faith*, is of paramount importance in its being the first attempt of systematising the fundamental thoughts of the Mahâyâna Buddhism, as well as in its forming a main authority of all the Mahâyânistic schools, those who study the doctrinal history of Buddhism cannot dispense with it; and that, in spite of its highest importance, no attempt has yet been made to make it accessible to the reader who is not familiar with the Chinese language, and so it is my intention to offer to the public an English translation of the entire text.

TEITARO SUZUKI.

LA SALLE, ILL.

THE FOOD OF LIFE AND THE SACRAMENT.

THE BIBLICAL ACCOUNT AND PAGAN PARALLELS.

THE problem of the origin of death according to the religious solution of the Hebrews is treated in a legend preserved in the second and third chapters of Genesis. After the creation of man, Yahveh-Elohim planted a garden irrigated by four rivers and "full of trees pleasant to the sight and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil." The account continues:

"And the Lord God took the man, and put him into the garden of Eden to dress it and to keep it.

"And the Lord God commanded the man, saying, Of every tree of the garden thou mayest freely eat:

"But of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die."

Here follows the report of the creation of animals and of Eve the woman taken from Adam's ribs. The story continues:

"Now the serpent was more subtil than any beast of the field which the Lord God had made. And he said unto the woman, Yea, hath God said, Ye shall not eat of every tree of the garden?

"And the woman said unto the serpent: We may eat of the fruit of the trees of the garden:

"But of the fruit of the tree which is in the midst of the garden, God hath said, Ye shall not eat of it, neither shall ye touch it, lest ye die.

"And the serpent said unto the woman, Ye shall not surely die:

"For God doth know that in the day ye eat thereof, then your eyes shall be opened: and ye shall be as gods, knowing good and evil.

"And when the woman saw that the tree was good for food, and that it was

pleasant to the eyes, and a tree to be desired to make one wise, she took of the fruit thereof, and did eat, and gave also unto her husband with her; and he did eat.

"And the eyes of them both were opened, and they knew that they were naked; and they sewed fig leaves together, and made themselves aprons."

The home of this legend undoubtedly is Chaldea, for the names *Eden*, as well as the rivers of Eden[1] are Chaldean, and the tree of life plays an important part in Chaldean mythology.[2] In fact, excavators have been so fortunate as to discover a great number of ancient stone tablets containing the original versions of Old Testament legends: the story of the Deluge; the destruction of cities by rain and fire; the creation of the world in six days; the adventures

CHALDEAN SEAL CYLINDER. (BRITISH MUSEUM.)

PICTURE DISCOVERED IN THE RUINS OF THEBES.

ILLUSTRATIONS OF THE STORY OF THE FALL.

of King Sargon, who in his infancy (like Moses) was exposed in a basket of rushes on the river, but was saved to become the hero of his nation, etc. We have therefore every reason to believe that the story of the origin of death is also a Chaldean story, especially as the tree of life plays an important part in the sculpture of all the nations of Mesopotamia; and an illustration of a man and a woman under

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[1] Eden is the Accadian *edinna*, the Euphrates is the *Purrat* (or curving water), Hiddekhel is Hid-Idikna (Hid means river in Accadian). The Hebrew Sabbath is an ancient Accadian institution; *Sabattu* means "day of rest." Assyrian texts speak of it as "a day of rest for the heart," "a day of peace," "a day on which work is unlawful," or as "the completion of labors," etc.

[2] The story of the creation in Gen. i.–ii. 3 differs in many essential features from the report in Gen. ii. 4 et seq. Both are ultimately derived from Chaldæa but the former is a younger importation. The latter had time to be adapted to the country and may therefore be called the Canaanitic account.

a tree, and a serpent behind the woman, has been discovered o ancient Assyrian cylinder. A similar picture was discovered in ruins of Thebes by Herr Norden, who published it in his *Jou to Egypt* (Table LVIII.).[1] Considering the close connexio which Egypt and Assyria stood at the age when the tables of T el-Amarna were manufactured, it is quite probable that the ide the origin of death being caused by the eating of some fruit sh have been transferred to Egypt, and we are still inclined there to regard the Chaldean origin as the most probable.

We know that the tree spirit was worshipped in Egypt or count of its soul-preserving power.

The Egyptian soul is conceived in a twofold way as the *k* double, i. e., the form of a man's personality[2] (his *Ebenbild*), as the *ba* or consciousness, the spirit that animates him. *ka* was represented as a statue or image of a man, and each pe had his individual *ka*, which was conceived as a kind of astral b and was thought to bestow "protection, intelligence, purity, he and joy" upon its bodily representative during its earthly pilg age.[3] The *ba* was pictured as a hawk with a human head, w after death was supposed to take its flight up to Osiris or to h near the body in the tomb.

How prominently the worship of the tree spirit was conne in ancient Egypt with the punishment of the soul appears from fact that these three ideas, the *ba*, the *ka*, and the tree spirit, w the centre of the family religion of Egyptian life. Says Prof. M. Flinders Petrie:[4]

"Closely linked with the belief in the *ka* and *ba* was the worship of the spirit. In many representations we have the tree goddess in various forn human, cow-headed, or shown as a mere arm emerging from the branches o

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[1] The picture is here reproduced from Bishop Münter's work, *Sinnbilder Kunstvorstellungen der alten Christen*, Altona, 1825.

[2] In Hebrew דְּמוּת, "likeness" or "image," translated by the Septuagint The passage in Gen. i. 26 means that Adam was shaped in the *ka* of Elohim.

[3] The symbol of the *ka* is two arms bent at right angles with hands stre upwards. See Erman, *Life in Ancient Egypt*, English edition, p. 307.

[4] *Religion and Conscience in Ancient Egypt*, pp. 33–35.

sycomore, and pouring out blessings on the kneeling *ka* and the bowing *ba* bird. The sustenance of the parts of the dead was attributed to the beneficent tree spirit, and hence the widespread veneration of the sycomore in every home, and more particularly about Memphis with its vast cemetery of Sakkara, where the great sycomore of the south was a noted feature.

"The focus of domestic worship then appears to have been a niche or false door in the wall of the principal hall, usually in the west wall like the false doors of tombs; this was dignified with steps in some cases, and painted with the objects of adoration, the ancestral double and spirit, *ka* and *ba*, and the tree-genius who preserved them."

THE BA VISITING THE BODY.[1]

Professor Petrie adds:

"It seems that a tree with its thick hiding foliage and deep shade was thought to be a particularly suitable abode for both human and divine spirits; and 'the sycomore of the south' is called the living body of Hathor."

Without attempting to criticise Professor Petrie's explanation, we venture to suggest that the tree was probably worshipped in prehistoric times for the shelter which it gave and the fruits which it offered. If the soul after death could not find a tree, it was supposed to be without protection and sustenance, and so the spirit of the tree was invoked to grant an asylum to the homeless spirits of the deceased.

[1] From the Ani papyrus.

Our illustration which is reproduced from Lenormant's *Histoi de l'Orient*, Vol. III., p. 202, represents the *ba* under a pers tree gratefully accepting the drink of life from the Nut godde

NUT FEEDING THE BA WITH WATERS OF LIFE FROM HEAVEN. ISIS AND NEPHTHYS WITNESS THE SCENE.

of heaven residing in a tree spirit. Two goddesses carrying a flow crowned staff in their right hand and the key of life in their le witness the scene.

THE CORONATION BAPTISM OF KING RAMESES III. (Lübke's *Gesch. d. Plastik*, p. 39.)*[1]

That the idea of the wat of life was not limited to t conception of drinking it, b also of bathing in it, can proved by an ancient Egypti bas-relief which represents t baptism of King Rameses III. the gods Thoth and Horus, t former representing the Egy tian Logos-deity, the latter, g the son, the child of Osiris a Isis, the avenger and the resu rected sun-god. There can be no doubt about the significance

[1] The author is indebted to J. L. Corning of Munich, formerly American cons for all the illustrations marked with a star. They have been reproduced from ha drawn copies, being part of his valuable MS. collection of pictures illustrating kinship of religious myths.

the liquid which these deities pour out upon the sun-adorned head of the king, for it is represented by streams of Egyptian crosses (☥), the so-called keys of life.

This baptism with the water of life remained an important part of the coronation ceremony of Egyptian kings down to Roman times, for even the emperors, as Augustus and others, are represented in the monuments as receiving this baptism with the water of life at the hands of the Egyptian gods.

BAPTISM OF CHRIST WITH WATERS FROM HEAVEN.
Tombstone of Aquileja.[1]

The most modern form of the water of life is the myth of the fountain of youth which during the age of the discovery of America was supposed to be in Florida.

Stories travel, especially religious stories; and so we may assume that the idea of the golden apples of Idun which we find in Northern mythology is the same story as the legend of Genesis indicated by the idea of the tree of life. We read in the Edda that enemies of the gods had stolen Idun's immortality-giving apples, and the task devolved upon Thor to bring them back to Asgard;

[1] Reproduced from F. X. Kraus, *Geschichte der christlichen Kunst*, Vol. I., p. 164.

for the gods began to grow old, and would have suffered death u less they regained the food upon which their immortality d pended.

The story of Hercules and the golden apples of the Hesperid is the Greek version of the legend of the tree of life, and it is

HERCULES PLUCKING THE APPLE.*[1]

no means accidental that Greek pictures of Hercules in the gard of the Hesperides remind us vividly of the story of Adam and E in Eden.

[1] Relief on a marble tablet at Benevento. The serpent is wound about the tru living, and one of the Hesperides lies sleeping beneath. Copied from Donii *Inscriptiones Antiquae*, Tab. VII., n. 2.

We must call attention to the fact that there are two kinds of trees—life-giving and death-giving trees. The tree of life is mentioned only twice in Genesis: when Adam had eaten of the tree of knowledge of good and evil, God said: "Behold, Adam has become as one of us, knowing good and evil; and now lest he put forth his hand and take also of the *tree of life* and eat and live forever, therefore Yahveh-Elohim sent him forth from the Garden of Eden to till the ground from whence he was taken." (Genesis, Chap. iii., 22, 23.)

When Proserpine, the goddess of spring, was carried off by Pluto, the god of death, Venus offered her a pomegranate to eat,

HERCULES IN THE GARDEN OF THE HESPERIDES.

An antique vase-picture representing the poisoning of the serpent and the delivery of the fruit on a branch.*[1]

and so made Proserpine subject to the king of death. That was a fruit from the tree of death, and Venus, the goddess of love, offered it to Proserpine. Pomegranates play an important part in the Eleusinian mysteries.

Similar stories of life-sustaining and death-imparting apples, or other fruits, occur in many other myths, in the stories of Hercules, in the German fairy tales,[2] and also in the folklore of savages in various parts of the earth.

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[1] From Gerhard's *Ak. Abh.*, Tabel XX., fig. 1.

[2] The wicked step-mother tries to kill little Snowwhite (*Schneewittchen*) with a poisoned apple.

The Book of Genesis does not mention what kind of fruit the tree of life bears. In Assyrian sculptures it has the appearance of a pine cone, except that it is very large; it might be a pineapple were it not on a tree. In European folklore the fruit is commonly called an apple, and Christian art always represents the tree of the knowledge of good and evil as an apple-tree. We cannot doubt that the idea, which, so far as we know, was first pronounced by St. Augustine, is derived from Greek mythology, the apple being the symbol of Venus.

Biblical interpreters have never failed to point out the connexion between the tree of the knowledge of good and evil and sexual-

HERCULES PLUCKS THE FRUIT OF THE TREE, THE SERPENT HANGING LIFELESS ON THE TRUNK. (Antique gem.)

A MEDAL OF EMPEROR ANTONINE.*
Copied from Millin's *Gallerie Mythologique*, fig. 445.

ity. Adam and Eve were unconscious of good and evil before they ate of the fruit, and knew that they were naked after having partaken of it. Both Gnostic and Christian writers regard the whole story as an allegory in which the fall of man was identified with sensual pollution. And thus the idea originated that immortality could be regained only by perfect abstinence, or virginity. This is plainly expressed in Christian and Gnostic scriptures. In the gospel of the Egyptians, we read that immortality depends upon the perfect restoration of innocence. Jesus answers Salome's question, "How long shall Death reign?" by saying: "As long as ye women give birth, for I came to make an end to the works of

woman." Similar ideas reverberate through the canonical New Testament, and can be traced through the literature of the early Christians.

The connexion of death with birth is as natural as it is true. The Buddhists speak of all compounds as being subject to dissolution, and thus everything that is born is doomed to die. A beginning necessitates an end and only that which is without a beginning can be without end.

PICTURE ON AN ANCIENT GEM.*[1]
From Spence's *Polymetis*.

THE TREE OF LIFE AND THE SERPENT ON AN ANTIQUE CAMEO.
(From Montfaucan.)*[2]

[1] Mr. J. L. Corning quotes Higgins, who says in his *Anacalypsis:* "Here is the serpent called Heva tempting Adam. Spence calls it a drawing of Hercules, after he has killed the serpent; but why is the serpent up in the tree, instead of lying dead on the ground? Where are the club, the lion's head and feet? The serpent is evidently whispering in Adam's ear, while he is taking an apple. Parkhurst has given a passage from Clemens which proves that the Greek Bacchanals were well acquainted with the myths of Eve."

[2] We owe this picture as all the other illustrations of the tree in the garden of Hesperides to Mr. J. L. Corning. It has been reproduced by Montfaucon who says of it: "It was preserved for several centuries in one of the most ancient churches of France, and passed for an image of terrestrial paradise to represent the fall of Adam." The inscription which Montfaucon regards as being modern and in Hebrew is, according to Higgins, an allusion of the biblical myth and should read: "The woman saw that the tree was good for food, and that it was pleasant to the eyes, and a tree to be desired to make one wise." (See his *Anacalypsis* I

But the comfort of all primitive religions is not so much t attainment of eternity as of regeneration. The wish for immortali therefore leads to the conception of resurrection.

Dionysus, the emancipator, the liberator, the saviour, is the l and happiness-bringing god of Greece. He rescues Kora, which but another name for Proserpine, the life-spending vegetation, t daughter of Demeter, the personification of the earth, from t power of death, and celebrates with the rescued goddess his ma riage feast.

HERCULES IN THE GARDEN OF THE HESPERIDES.
Picture on an antique water urn.

AN ANCIENT PAGAN SCULPTURE.
Reproduced in Montfaucan's first v ume of *L'Antiquité Expliquée.*[*]

pp. 272-273). But all this is mere guesswork. The inscription is illegible in reproduction and is probably not less unintelligible in the original cameo. It see to us very doubtful whether it is Hebrew, and may be, for all we know, an exam of Ephesian letters. We would add that the cameo, if genuinely antique, indica a version of the myth which cannot be traced in the Greek poetry now extant. T man is not Hercules, but Zeus, as indicated by the thunder bolt. The fem figure is probably one of the Hesperides but may be Miverva, or Juno, or Aph dite, or even Proserpine. The animal which jumps up at the trunk of the tree obviously intended to play a significant part, for the attitude of the woman indicat that she intends to stoop toward it. The part which the five animals play th appear underneath the main design is doubtful; they do not help in the explan tion, but make the intention of the whole composition still more obscure.

[1] This picture does not represent Hercules in the traditional costume with clu and lion's fur, which goes far in proving that it does not represent the garden the Hesperides but some kindred subject. But for the absence of the golden flee it might be Jason and Medea.

The symbol of the Dionysian cult is the wine which on account of its exhilarating effect is regarded as the water of life. The god makes his appearance in a triumphal procession with shouts of εὐοῖ! riding on a donkey. The thyrsus of the Bacchic revellers carries on its top a cone, the same fruit in the very same form that appears as the fruit on the tree of life on Assyrian illustrations.

There is no saviour among the Greeks the events of whose life are not somehow connected with the acquisition of the fruits of the

HEBE OFFERING HERCULES THE CUP OF IMMORTALITY.*
A vase painting copied from Inghirami's *Monumenti Etrusche*, Tab. XXXVI.

tree of life and the drink of immortality. Thus Hercules, the national hero of Greece, is reported to have gone to the garden of the Hesperides and plucked the life-giving apples from the tree guarded by a serpent. But there is this difference, that according to the Greek version Hercules deceives the serpent, while in the Biblical account the serpent deceives Adam.

Judging from the illustrations preserved on vases and bas-reliefs, the traditions of the myth, such as we know them through

Greek authors, must be greatly mutilated and corrupted. Ma
incidental features of these illustrations remain unexplained, a
it is quite possible that if we knew all the obliterated features
the legend, we could better define its relation to, and trace its c
nexion with, the ancient Assyrian story of the tree of life.

The legend of the tree of life is closely related to an anci
Oriental ritual which was a partaking of the food of life, par
in commemoration of the dead, partly as a sacrament celebra
for the purpose of acquiring the mysterious power of a resurrecti

The Chaldean story of the origin of death has been discove
in the tables of Tell-el-Amarna, and in the Library of Asurba
pal, in Nineveh, a fragment of the story being in the possession
Professor Scheil, who published an article on the subject under t
title, "A Page of the Sources of Berosus."[1]

According to the tables of Tell-el-Amarna, as reported by Gu
kel,[2] Adapa had done some wrong to the storm bird representi
the south wind, and was cited before the tribunal of Anu, the G
of Heaven. Ea advises him how to gain the favor of the two go
that serve as gate-keepers of heaven. As soon as they had us
ered him into the presence of Anu, some food of death would
offered him which he should not eat; water would be handed h
which he should not drink; a garment would be given him whic
however, he should don; oil would be offered him, with which
should anoint himself. When Adapa came to heaven everythi
happened as Ea had told him, with the exception that Anu at
intercession of Tammuz and another deity took pity on Adapa.
Anu did not offer him food of death and water of death, but food
life and water of life; which, however, following the behest of E
Adapa refuses, and thus foregoes the boon of eternal life.

Adapa is a Babylonian Adam; he is called "The Seed of M
kind," and his characteristic feature is "wisdom," perhaps in
same sense that modern zoölogists speak of the species *homo*

[1] *Recueil de Travaux relatifs à la Philologie et l'Archæologie Egyptien
et Assyriennes*. Vol. XX., 1898. "Une page de Bérose."

[2] Gunkel, *Schöpfung und Chaos*, p. 420 et seq. Comp. p. 148, footnote 3, a
p. 151.

piens. Adapa is apparently, as Professor Zimmern, of Leipsic, suggests, the Alaparos of Berosus, the confusion of the Greek Λ and Δ being easily explained by the similarity of their forms.

A literal translation[1] of the Adapa myth reads as follows:[2]

[Several lines at the beginning are missing.]

"... The Southwind (blew and dipped him under water), into the mansion (of his master) he immersed him:

"'O, Southwind, (thou hast) done me harm! Thy wing I shall break!'

"As soon as he had spoken thus with his mouth, the wings of the Southwind were broken. Seven days the Southwind no longer blew over the earth.

"Anu spoke to his messenger Ilabrat: 'Why does the Southwind since seven days no longer blow over the earth?'

"His messenger Ilabrat answered him: 'My Lord! Adapa, the son of Ea, has broken the wings of the Southwind.'

"When Anu heard this word he cried out: 'Help!' He sat down on his throne ...

[Here is missing, Ea's advice given to Adapa.]

"... Ea ... Heaven ... he requested to bring him a dress of mourning

"... he put it on.

"... [to Anu] the King now must go.

"[When thou ascendest] to the [Heaven and when thou approachest the throne of Anu], at the throne of Anu there will be [Tammuz and GIS.ZI.DA].

"They will see thee and ask thee: 'For whose sake do you look like that, Adapa, for whom do you wear a dress of mourning?'

"[Thou must reply]: 'Two gods have disappeared from our earth; therefore I do so.'

"[They will ask thee]: 'Who are the two gods who from the earth have disappeared?'

"[Thou must reply]: 'Tammuz and GIS.ZI.DA.'

"Then they will look at one another and wail, but then a good word to Anu they will speak, and will make that Anu will look kindly on you.

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[1] Translated from E. T. Harper's German translation of the stone tablets in Hermann Gunkel's *Schöpfung und Chaos*, p. 240 ff. We omit the division of lines, which are as much as possible preserved by the German translator as they are in the stone tablet. The original is not always metrical, yet in some places unmistakably betrays rhythm. The tablets were written at the request of King Amenhotep or his mother, an Assyrian princess, the Queen Dowager Tye, for the purpose of imparting religious information, and it is probable that the copyist made slight changes in the Assyrian poem for the purpose of rendering the sense of the myth more intelligible to the Egyptian reader.

[2] *Beiträge zur Assyriologie*, II., p. 420 ff. See also Zimmern, *S. S. Times*, Philadelphia, June 18, 1892.

"When thou appearest before Anu, one will offer to thee food of death. E not of it! Water of death they will offer thee. Drink not of it! A garment th will offer thee. That, however, don! Oil they will offer thee: anoint thyself w it! The counsel which I give to thee do not despise, the word which I have spok to you hold fast.

"Then the messenger came to Anu [saying]: 'Adapa [is here who] has brok the Southwind's wing.'

"[Anu replied]: 'Let him appear before me.'

". . . of the sky he made lie down, to the sky he ascended. When he arriv in heaven he approached the throne of Anu. There were standing at the throne Anu, Tammuz and GIS.ZI.DA. When they beheld Adapa they cried out, 'Hel [adding]: 'Sir! For whose sake dost thou look like that, Adapa, for whom d thou wear a garment of mourning?'

"[He replied]: 'From the earth two gods have disappeared, therefore I we a garment of mourning.'

"[They asked]: 'Who are the two gods who have disappeared from t earth?'

"[He replied]: 'Tammuz and GIS.ZI.DA.'

"Then they looked at one another and wailed.

"When thereupon Adapa turned to Anu the king, and when Anu beheld h he said to him: 'O, Adapa! why hast thou broken the wings of the Southwind

"Adapa answered to Anu: 'My Lord! For the house of my master I caug in the midst of the ocean fishes. The sea was as smooth as a mirror. Then t Southwind blew and dipped me under. Into the house of my lord he immers me. In the wrath of my heart . . .'

"[Tammuz] and GIS.ZI.DA spoke a good word (for him) to Anu; then h wrathful heart was assuaged.

"[He said]: 'Why did Ea allow an impure man to see of the heaven and the earth the most inner secrets, made him great, and bestowed a name on hi But we, what can we endow him with? Food of Life fetch for him, that he m eat!'

"Food of Life they fetched for him, but he did not eat. Water of Life th fetched for him, but he did not drink. A garment they fetched for him, he pu on. Oil they fetched for him, that he might anoint himself.

"Then Anu looked at him and wailed over him: 'O, Adapa, why didst th not eat, why not drink? Thus thou shalt not have (eternal) life. . . .

"[Adapa said]: 'Ea, my Lord, has commanded me: Eat not, drink not!'

". . . he returned to his country." [The concluding lines are broken off.]

The discovery of Assyrian stone tablets in Egypt was quite surprise and seemed at first sight very strange; but the myste has been solved, and we know now that in the second millenniu

KING CHU-EN-'ETEN; HIS CONSORT THE QUEEN, AND HIS SIX DAUGHTERS MAKING SACRIFICIAL OFFERINGS TO THE SUN.

KING CHU-EN-'ETEN PROTECTED BY THE SUN-GOD, REPRESENTED AS MAKING THE PEOPLE OF EGYPT PROSPEROUS. From the Monuments of Tell-el-Amarna.[1]

[1] Meyer, *Gesch. Aeg.*, cf. Springer, *Handb. Alterth.*, p. 26.

B. C. Assyrian was the international language of the E
much so that the Egyptian vicegerents of Canaan wrote t
ports to Pharaoh, the sovereign of these districts in those ce
in Assyrian and not in Egyptian! Assyrian was the offic
guage of the Orient in politics and general culture. Now
pened that Amenhotep III., one of the kings of the vigor
nasty of Thebes who expelled the Hyksos and greatly e

DEATH-MASK OF CHU-EN-'ETEN.
(Petrie.)

STATUE OF CHU-E
(Raget.)[1]

the boundaries of Egypt so as to include Canaan, married
rian princess, Queen Tye, an ardent worshipper of the su
sole true God. After the king's death, she seems to hav
an important rôle at court. Her son, Amenhotep IV., wa

[1] We here reproduce the cast and statue of King Chu-en-'eten in e
the faithfulness with which he is portrayed in the monuments. The
seems to indicate a weakness of character and may account for the fail
far seeing, perhaps too far-sighted, monotheistic reform.

sively under her control. Obviously at the suggestion of the queen dowager he changed his name to Chu-en-'eten, which means "splendor of the solar disk," and built a new capital near the modern town of Tell-el-Amarna. The religious reformation of King Chu-en-'eten was not a lasting success. The people still clung too tenaciously to their traditional polytheism and did not take kindly to the foreign monotheistic sun-worship. Three successors of Chu-en-'eten, S'aanacht, his son-in-law, the priest 'Ey, one of his intimate friends, and third in order Tuet'anchamun, a convert to the new faith, were succeeded in about 1320 B. C. by the powerful Har-em-heb, the leader of the discontented, the reactionary polytheistic party, whose counter-reformation wiped out every trace of the monotheistic Assyrian sun-worship.

Judging from statues and bas-reliefs, Chu-en-'eten was of a sickly disposition and of a weak character. Had he been less fanatical and more circumspect, he might have reconciled the powerful Egyptian clergy; but lacking the necessary discretion he finally failed through the general discontent created by his innovations. Prof. Adolf Erman in his *Life in Early Egypt* says (Engl. tr., p. 46–47):

> "We shall always lament the sad end to Chu-en-'eten's reformation; for though it was a good thing for the country that the state of disorder should cease, yet this victory of the old orthodox party sealed the fate of the Egyptian religion, —no one again attempted a reformation, and the religious conceptions of the nation were narrowed."

So much in explanation of the discovery of Assyrian stone tablets in Tell-el-Amarna.

The legend of the food of life and the food of death is the story of Tammuz, the Lord or Adon of the Asiatics and the Adonis of the Greek. It is the God who dies and whose death is lamented but who is resurrected again under great rejoicing. The prophet Ezekiel complains about the Jewish women who took part in the Tammuz festival (ix. 14), and we know of Astarte, the Queen of Heaven, that she was worshipped with offerings of cakes and of drink. The prophet Jeremiah rebuked the Egyptian Jews for their idolatry, but they answered him:

"Then all the men which knew that their wives had burned incense unto other gods, and all the women that stood by, a great multitude, even all the people that dwelt in the land of Egypt, in Pathros, answered Jeremiah, saying,

"As for the word that thou hast spoken unto us in the name of the Lord, we will not hearken unto thee.

"But we will certainly do whatsoever thing goeth forth out of our own mouth, to burn incense unto the queen of heaven, and to pour out drink offerings unto her, as we have done, we, and our fathers, our kings, and our princes, in the cities of Judah, and in the streets of Jerusalem: for then had we plenty of victuals, and were well, and saw no evil.

"But since we left off to burn incense to the queen of heaven, and to pour out drink offerings unto her, we have wanted all things, and have been consumed by the sword and by the famine."

Sacramental eating was connected with almost all Oriental religions and the rite symbolised the attainment of life immortal. It is perhaps no accident that the Israelites who, though living among nations that believed in immortality, pass the doctrine over in the sacred writings with silence, express an aversion for sacramental food-offerings as idolatrous.

The story in Genesis is apparently mutilated. In the Chaldean report we have a tree of life and a tree of death; food of life and food of death; water of life and water of death. This contrast is lost sight of in Genesis, and the strange thing is that according to Genesis the forbidden tree which is spoken of as the Tree of the Knowledge of Good and Evil, proves to be the tree of death, while in the myth of the Tables of Tell-el-Amarna it is the food of death which Adapa is warned against, and the food of life that is offered him; and he foregoes the boon of immortality because he refuses to eat of it.

SACRAMENTAL EATING AND CANNIBALISM.

In the Homeric age the Greek offered libations to the gods and the form in which they sanctified the cup reminds one strongly of the Christian sacrament. When old Priam proposed to ask the slayer of Hector for the body of his beloved son, he prayed to Zeus with the sacramental cup in hand, the scene being thus described by Homer (*Il.*, XXIV., p. 305–309):

"When he had sprinkled with water, his wife a chalice him handed.
There in the courtyard standing he prayed; and looking to heaven
Took he the wine and, uplifting his voice, spoke loudly as follows:
'Zeus, our father, thou ruler of Ida, supremest and greatest,
Oh, let Achilles receive me to-day with compassion and mercy!'"[1]

The Romans had an ancient custom of celebrating love-feasts, called *charistia*, to which none but kin and relations were invited. If some quarrel had arisen between relatives, it could more easily be adjusted when the sanctity of the table and the merriment of the company made every one better inclined to mutual good-will.[2]

We need not assume that the Roman *charistia* originated under Assyrian, or Persian, or Egyptian influence; we are perfectly justified in regarding the custom as indigenous, for it seems to date back to the early days of the republic. The bread for daily use was regarded with a pious awe, as it is still in many parts of Europe. Bread represents life, and it is not a senseless ornament when we found the loaves of ancient Rome marked with a cross,[3] the symbol of life.

The celebration of the Tibetan ceremony for obtaining "immortality" has been called by the missionary Huc "the Buddhist Eucharist" on account of its resemblance to the Christian sacrament. The ceremony is of great interest; as it is not much known, we quote a report of it from Mr. L. A. Waddell's *Lamaism*, pp. 444–448:

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[1] Translated in the meter of the original, which reads as follows:

Νιψάμενος δὲ κύπελλον ἐδέξατο ἡς ἀλόχοιο.
εὔχετ' ἔπειτα στὰς μέσῳ ἕρκεϊ, λεῖβε δὲ οἶνον
οὐρανὸν εἰσανιδὼν, καὶ φωνήσας ἔπος ηὔδα·
Ζεῦ πάτερ, Ἰδηθεν μεδέων, κύδιστε, μέγιστε,
δός μ' ἐς Ἀχιλλῆος φίλον ἐλθεῖν ἠδ' ἐλεεινόν.

[2] "Convivium etiam solemne majores (Romanorum) instituerunt idque charistia appellaverunt, cui praeter cognatos et affines nemo interponebatur, ut siquid inter necessarios querela esset orta, apud sacra mensae et inter hilaritatem animorum fautoribus concordiae adhibitis tolleretur." *Val. Max.*, II., 1, 8.

[3] The cross, or rather the figure of two intersecting lines, was a salutary sign, but it was not called a "cross" until after the reign of Constantine crucifixion had been abolished.

"This sacrament is celebrated with much pomp at stated periods, on a lucky day, about once a week in the larger temples, and attracts numerous votaries. Crowds throng to the temple to receive the coveted blessing. Its benefits are more particularly sought in cases of actual illness, and when death seems imminent; but every village must have it performed at least once a year for the life of the general community, and after its performance any prolongation of life is credited to this service; while a fatal result is attributed to the excessive misdeeds of the individual in his last life or in previous births.

THE BUDDHIST EUCHARIST.
Reproduced from Waddell's *Buddhism of Tibet*.

"The chief god addressed is Buddha *Amitayus* or *Aparamita*, 'The god of infinite Life,' or 'The Eternal.' Unlike the Chinese Buddhists, the Lamas never confuse *Amitabha* (the Buddha of infinite Light) with his reflex *Amitayus*; they represent these differently, and credit them with different functions. The other gods specially identified with life-giving powers are 'The five long-Life Sisters,' mountain nymphs presiding over the everlasting snows, and to a less degree the white Tārā, and Ushṇisharāni; and even *Yama*, the Lord of Death himself, may occasionally be propitiated into delaying the day of death.

"The priest who conducts this ceremony for propitiation of *Amitayus* and the other gods of longevity must be of the purest morals, and usually a total abstainer from meat and wine. He must have fasted during the greater part of the twenty-four hours preceding the rite, have repeated the *mantras* of the life-giving gods many times, 100,000 times if possible, and he must have secured ceremonial purity by bathing. The rite also entails a lot of other tasks for the prepa-

ation of the consecrated pills and the arrangement of utensils, etc., and extends over two or three days.

"The arrangements are as follows:

"Upon an altar, under the brocaded dragon-canopy, within the temple or in a tent outside, are placed the following articles:

"1. *Las-bum*, the ordinary altar water-vase.

"2. *Ti-bum*, the vase with pendent mirror and containing water tinged with saffron.

"3. *dBan-bum*, the 'empowering vase' with the chaplet of the Five Jinas.

"4. *Ts'e-bum*, the 'vase of Life,' special to *Amitayus*, with a banner of peacock's feathers and sacred Kusa-grass.

"5. *Ts'e-ch'an*, or the 'wine of Life,' consisting of beer in a skull-bowl.

"6. *Ts'e-ril*, or the 'pills of Life,' made of flour, sugar, and butter.

"7. *Chi-mar*, or wafers of flour and butter and rice.

"8. *mDah-dar*, or sacred divining-dagger with silk tassels.

"9. *rdor-jehi gzun t'ag*, or the divining-bolt, a *vajra* or thunderbolt-sceptre with eight ridges to which a string is attached.

"In the preliminary worship the pills are made from buttered dough, and the ambrosia or *amrita* (Tib., *dud-tsi* or 'devil's juice') is brewed from spirit or beer, and offered in a skull-bowl to the great image of Buddha *Amitayus*. Everything being ready and the congregation assembled, the priest, ceremonially pure by the ascetic rites above noted, and dressed as in the frontispiece, abstracts from the great image of Buddha *Amitayus* part of the divine essence of that deity by placing the *vajra* of his *rdor-jehi gzun-t'ag* upon the nectar-vase which the image of *Amitayus* holds in his lap, and applying the other end to his own bosom, over his heart. Thus, through the string, as by a telegraph wire, passes the divine spirit, and the Lāma must mentally conceive that his heart is in actual union with that of the god *Amitayus*, and that, for the time being, he is himself that god. Then he invokes his tutelary-fiend, and through him the fearful horse-necked *Hayagriva* (Tamdin), the king of the demons. The Lāma, with this divine triad (namely, the Buddha and the two demon kings) incorporate in him, and exhibiting the forms of all three to spiritual eyes, now dispenses his divine favors. He takes up the *Las-bum*-vase and consecrates its contents, saying:

"'*Om! namo Tathagata Abhi-khita samayasriri hum! Nama candra vajra krodha Amrita hum phat!*'

"Then he sprinkles some of the water on the rice-offerings (*gtor-ma*) to the evil spirits, saying, 'I have purified it with *svabhava*, and converted it into an ocean of nectar within a precious *Bbum*-bowl. *Om akaromu-kham! Sarva dharma nantyanutpanna tatto! Om! A! Hum! phat! Svaha!* I now desire to bestow the deepest life-power on these people before me; therefore, I beg you demons to accept this cake-offering, and depart without doing further injury.'

"Here the Lāma, assuming the threatening aspect of the demon-kings, who

are, for the time being, in his body, adds: 'Should you refuse to go, then I, who am the most powerful *Hayagriva* and the king of the angry demons, will crush you—body, speech and mind—to dust! Obey my mandate and begone, each to his abode, otherwise you shall suffer. *Om sumbhani*,' etc. Now, the Lāmas and the people, believing that all the evil spirits have been driven away by the demon-king himself, shout, 'The gods have won! the devils are defeated!'

"The Lāma then proceeds to secure for himself the benedictory power of life-conferring. He first meditates on 'the guardian-deities,' murmuring thus: 'The upper part (of the divine abode) is of thunderbolt tents and hangings; the lower part of earth-foundation and adamantine-seat; and the walls are of thunderbolts. The entire building is a great tent, protected by precious charms, so that the evil spirits can neither destroy it, nor can they gain entry. *Om! vajra rakhya rakhya sutra tikhtha vajraye svaha!*'

"Then the magic-circle (*mandala*) is offered up, saying:

"'If I fail to refer to the successive Lāma-saints, my words and deeds will count for nothing. Therefore must I praise the holy Lāmas to secure their blessing towards the realisation of my plans. O holy *Padma-sambhava*, in you are concentrated all the blessings of the present, past, and future! You are the Buddha of the great final Perfection (*Maha-utpanna*) who beheld the face of Lord *Amitayus*. O saint possessed of the gift of undying life, of life lasting till the worlds of re-births are emptied! You hid away from us, in the snowy regions, the revelation upon the true essence of the five hundred 'Obtainings of Life.' The one which we now perform is 'the iron palace of the attainment of life' (*Ts'e-grub lc'ags-kyi-pho-bran*), and is extracted from *d Kon-mch'og-spyi-'dus*. It was discovered by the saint *'Dsah-Ts'on-snin-po* in the cave where you hid it; and the mode of endowering a person with life has come down to me through many generations of saints. Now, O Lord *Amitayus* and the host of radiant gods! I beg you to sustain the animal beings, vast as the starry host, who now, with great reverence and praise, approach you. *Om a hum!* O holy shrine of our refuge! *H* O Hosts of the Bright World of Light! *Pad-ma t'od-phren-rtsal-vajrasa-maye siddhi phala hum!*'

"Then here is repeated '*Ts'e-gug*,' or 'The Invoking of Life,' thus:

"'O Lord *Amitayus*, residing in the five shrines whence glittering rays shoot forth! O! *Gandharva* in the east! *Yama* in the south! *Naga raja* in the west! *Yaksha* in the north! *Brahma* and *Indra* in the upper regions! and *Nanda* and *Taksha* in the lower regions! And especially all the Buddhas and Bodhisatwas! I beg you all to bless me and to gratify my wishes by giving me the gift of undying life and by softening all the injuries of the harmful spirits. I entreat you to grant life and implore you to cause it to come to me. *Hri!* I beg your blessings, O Buddhas of the three times. (Dipankara, Sākya Muni, and Maitreya.

"At this stage the celestial Buddhas, Bodhisats, and other gods are now supposed to have consecrated the fluid in the vase and transformed it into immort

ambrosia. Therefore the priest intones the following chant to the music of cymbals: 'This Vase is filled with the immortal ambrosia which the Five celestial Classes have blessed with the best Life. May life be permanent as adamant, victorious as the king's banner. May it be strong like the eagle (*Gyun-drun*) and last forever. May I be favored with the gift of undying life, and all my wishes be realised.'

"'*Buddha! Vajra! Padma! Karma, Kapalamala. Hri maharinisaayu siddhi phala hum! Om A Hum vajra Guru Padma siddhi ayukkè Hum nĭja!*'

"The priest now bestows his blessing as the incarnate *Amitayus* as well as the other gods of longevity, by laying-on of hands, and he distributes the consecrated water and food to the assembled multitude. When the crowd is great the votaries file past the holy Lāma. In smaller congregations the Lāma, with the *Tĭ-bum* vase in hand, walks along the rows of kneeling worshippers near the temple door, and pours a few drops of the holy fluid into the hands of each votary. With the first few drops the worshipper rinses his mouth, and with the next few drops he anoints the crown of his head, and the third few drops are reverently swallowed.

"Then the Lāma brings the vase of Life and places it for an instant on the bowed head of each of the kneeling votaries, reciting the spell of Amitāyus (*Om Amarani jivantiye svaha*), which all repeat. Then the Lāma touches the head of each one with the power-conferring vase; and afterwards, in similar manner, with the divining-dagger, saying: 'The life which you now have obtained is unfailing like the *vajra*-armour. Receive it with reverence! As the *vajra* is unchangeable, so now is your life. *Vajra rakhya rakhya svaha!* Worship Amitayus, the god of boundless Life, the chief of all world-rulers! May his glory come, with virtue and all happiness.' And all the people shout, 'Glory and all-happiness!'

"Each worshipper now receives from the skull-bowl a drop of the sacred wine which he piously swallows; and each also receives three of the holy pills, the plateful of which had been consecrated by the touch of the Lāma. These pills must be swallowed on the spot. They are represented as beads upon the vase which the image of the god of Infinite Life holds in his lap.

"The Lāma then takes a seat on a low throne, and the votaries file past him offering him a scarf and any money presents they may have to make; the majority pay in grain, which is piled up outside the door of the temple. Each then receives a benediction from the Lāma, who places his hand on their heads and repeats the spell of *Amitayus*; and on its conclusion he throws over their shoulder a knotted white scarf (*Tsĭm-tu*) from a heap of consecrated scarves lying at his side. The colors of the scarves are white for the laity and red for the priests."

It is possible, we may even say probable, that the idea of food of life (be it as the fruit of the tree of life, or as a drink of life, or

as meat, or cakes, or bread of life) found expression at an early and prehistoric age in some religious ritual, for we know that the Indians as well as the Iranians celebrated sacraments which indicate the prevalence of such a conception of food. The soma and butter offerings of the Aryas in India and the Myazda sacrifice of Zarathustra remind us strongly of the use of the Hoddentin among the Apaches.

Captain John Bourke has collected interesting facts on the use of the Hoddentin among the Indians which show its close analogy to the Christian sacrament of the Lord's supper. He says in the "Medicine-men of the Apache"[1]:

"One of the first things to be noticed among the Apache, in this connexion, was the very general appearance of little bags of buckskin, sometimes ornamented, sometimes plain, which were ordinarily attached to the belts of the warriors, and of which they seemed to be especially careful.

"The bags spoken of revealed when opened a quantity of yellow colored flour or powder, resembling cornmeal, to which the Apache gave the name of 'hoddentin,' or 'hadntin,' the meaning of which word is 'the powder or pollen of the tule,' a variety of the cat-tail rush, growing in all the little ponds and cienegas of the Southwest.

"In dances for the benefit of the sick the medicine-men in the intervals between chants applied this yellow powder to the forehead of the patient, then in form of a cross upon his breast, then in a circle around his couch, then upon the heads of the chanters and of sympathising friends, and lastly upon their own heads and into their own mouths.

"No Apache would, if it could be avoided, go on the warpath without a bag of this precious powder somewhere upon his person, generally, as I have said, attached to his ammunition belt. Whenever one was wounded, hurt, or taken sick while on a scout, the medicine-man of the party would walk in front of the horse or mule ridden by the patient and scatter at intervals little pinches of hoddentin, that his path might be made easier. As was said to me: 'When we Apache go on the warpath, hunt, or plant, we always throw a pinch of hoddentin to the sun, saying "with the favor of the sun, or permission of the sun, I am going out to fight, hunt, or plant," as the case may be, "and I want the sun to help me."'

"'Upon attaining the age of puberty, girls fast one whole day, pray, and throw hoddentin to the sun.'

"When an Apache dies, if a medicine-man be near, hoddentin is sprinkled upon the corpse. The Apache is buried in the clefts of rocks, but the Apache-

[1] *Annual Report of the Bureau of Ethnology*, 1887–1888, pp. 499 ff.

Mohave is cremated. 'Before lighting the fire the medicine-men of the Apache-Mohave put hoddentin on the dead person's breast in the form of a cross, on the forehead, shoulders, and scattered a little about.'

"Hoddentin seems to be used to strengthen all solemn compacts and to bind faith.

"The myths of the Apache relate that Assanut-li-je spilled hoddentin over the surface of the sky to make the Milky Way."

Captain Bourke proves by a great number of quotations that analogous rites existed among many other nations, Negroes, the ancient Indians, Egyptians, and Europeans, and that on account of the conservatism in religious affairs the tendency prevails to retain for sacrificial meals some prehistoric food such as manna, unleavened bread, or wafers. Sacred breads and cakes are known all over Europe and the custom of eating them on special festive occasions dates back (as Grimm points out in his *Teutonic Mythology*, Vol. I., p. 63) to prehistoric times. The Mexicans celebrated "the festival of the wafer, or cake," in honor of Huitzilopochtli. Bancroft says:

"They made a cake of the meal of bledos which is called 'tzoalli,' which was afterward divided in a sort of communion."—*Native Races*, Vol. III., p. 323.

Concerning the prevalance of the notion of the healing power of prehistoric food among other nations than the Indians Captain Bourke quotes an instance from the ancient Japanese fairy tales, in one of which a hare flayed by a crocodile is given the following advice:

"Go quickly now to the river mouth, wash thy body with fresh water, then take the pollen of the sedges and spread it about, and roll about upon it; whereupon thy body will certainly be restored to its original state."

Our sketch of the sacred food of life would be incomplete, did we not mention the cannibalistic ceremonies of those savages who partake of the flesh and blood of a human sacrifice; and it is strange, though perhaps natural, that these terrible rites, wherever performed in honor of a deity of vegatation, that is to say, the nourishing power of nature, are frequently connected with the idea that the god himself must be partaken of as food. Such customs still prevailed in Central America when the Spaniards conquered

Mexico and seem to have been all but common at an early stage i the evolution of mankind. We quote one instance only which typical of many others. Prof. T. G. Müller says[1]:

"The main sacrifice of Tezcatlipoca was the youngest and most beautiful pri oner of war or slave, whose duty it was to represent the god in his youthfulnes He was worshipped the whole year as a god. Twenty days before the festival was married to four beautiful girls, and five days before the festival the most op lent feast was given him. On the day of the ceremony, he accompanied the ima of the god which headed the procession, and was then sacrificed in a temple esp cially built for the purpose, with all due reverence, about a mile outside of the cit beyond the lake. The heart cut out from his breast was presented to the imag and then to the sun; but the body was not, as is the case with other sacrifice thrown down over the steps of the temple, but carried down by the priests. Noble men and priests received the arms and legs of the sacrifice as a sacrificial meal The youths devoted to his worship performed a dance to the god, and the virgin offered honey cakes called 'holy flesh,' which was destined as a prize to the victor in the races which took place on the temple stairs."—P. 617.

The custom of sacrificing and eating a God-incarnation is no limited to the indigenous peoples of the New World but can b traced among the Negroes as well as among the primitive inhabi tants of Asia, and there the practice was continued down to th age of the Chaldæan civilisation. Thus Berosus tells us that "dur ing the five days of the festival called the Sacæa, a prisoner con demned to death was dressed in the king's robes, seated on th king's throne, allowed to eat, drink, and order whatever he chose and even permitted to sleep with the king's concubines. But a the end of five days he was stripped of his royal insignia, scourge and crucified."[2]

This Babylonian rite is apparently, as Mr. Fraser suggests, further evolution of a more ancient custom that is still practise among the savage tribes of Africa, according to which the king who is believed to be the incarnation of the deity, usually of life or of the sun or heaven, is sacrificed in his best years and before his physical powers can give out. Mr. Fraser says:

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[1] *Geschichte der Amerikanischen Urreligionen.*

[2] See J. G. Fraser, *The Golden Bough.*

"We must not forget that the king is slain in his character of a god, his death, and resurrection, as the only means of perpetuating the divine life unimpaired, being deemed necessary for the salvation of his people and the world."

With the advance of civilisation the old custom was modified. Mr. Fraser says:

"When the time drew near for the king to be put to death, he abdicated for a few days, during which a temporary king reigned and suffered in his stead. At first the temporary king may have been an innocent person, possibly a member of the king's own family; but with the growth of civilisation, the sacrifice of an innocent person would be revolting to the public sentiment, and accordingly a condemned criminal would be invested with the brief and fatal sovereignty."

Some ceremonies of Tibetan Buddhism indicate that the Tibetans celebrated in prehistoric times cannibalistic love feasts which had a religious significance. We quote the following condensed report from an article on "Death and Resurrection"[1]:

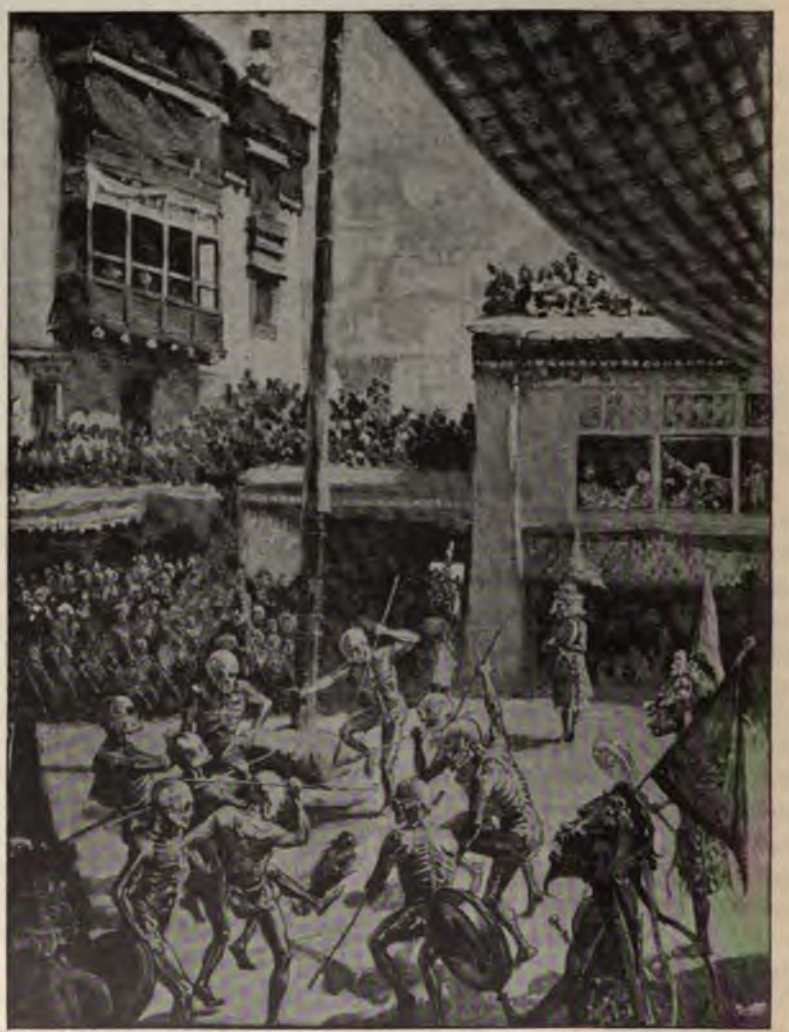
"Very strange performances are the death-dances of the Tibetan mystery-plays, one of which is performed on the last three days of the year and is called 'the ceremony of the sacrificial body of the dead year.' The effigy of a man made out of dough as life-like as possible and having inside a distinct heart and all the entrails filled with a red fluid, is placed by four cemetery ghouls in sight of the numerous spectators in the centre of the yard, and at once bands of skeleton-ghosts rush upon the corpse to attack it. This is the time to display the necromantic power of Lamaism over the evil spirits. Monks and lamas come forth and go through a series of ceremonies, the magic effect of which keeps the fiends away. But a more formidable devil with great horns and possessed of superior powers makes his appearance and takes the field. Whereupon a saint or an incarnation of Buddha himself comes to the rescue, sprays flour on the enemy, makes mystic signs and utters incantations. The skeleton-ghosts and the big fiend grovel before him and implore mercy. He graciously yields to their supplications and allows them to partake of a sacramental meal. While they kneel before him he gives to each one of them a little flour to eat and a drink out of a vessel of holy water.

"This concludes the day's performance.

"The corpse, however, is not destined to be preserved. On the next day the fight is renewed, and after a cannonade with blessed mustard-seed and other exorcisms, an awful demon appears whose title is 'the holy king of religion.' He wears the head of a bull, a dagger in the right and the effigy of a human heart in the left hand. This strange figure seems to represent the main deity of the ancient Tibetans, when they were still in the habit of offering human sacrifices, not in effigy

[1] Published in *The Open Court*, Vol. XI., pp. 496–498.

but in reality. The demon god has been converted by Buddha and become a protector of Buddhism. He is now satisfied with human sacrifices in effigy, and the



DANCE OF THE DEATH-DEMONS IN HEMIS MONASTERY.[1]
Preparatory to the sacrificial eating of the effigy of a man representing the dead year.

man made of dough, being supposed to be an enemy of Tibet, is surrendered to him. He dances round the figure of the man on the ground, stabs him, binds his

[1] Reproduced from E. F. Knight's *Where Three Empires Meet*, London, 1893.

feet in a snare, and at last cuts off his limbs, slits open his breast, takes out his bleeding heart, lungs, and other intestines. At this moment a horde of monsters falls upon the remnants of the dismembered dough man and scatters them in all directions. The pieces are collected again in a silver basin and the Holy King of Religion, eating a morsel, throws them up in the air. This is the signal for the *finale*: the pieces are caught and fought for by the demons, and at last the crowd of spectators joins the general scramble for pieces of dough, representing human flesh, which they either eat or treasure up as talismans.

"Similar ceremonies are executed by different sects in different ways, but all of them indicate survivals of practices which antedate the institutions of Buddhism."

Prof. W. M. Flinders Petrie, the learned Egyptiologist, has repeatedly called attention to the ancient customs of god-eating and of religious cannibalism. The killing of the deity which in civilised times was done in the shape of its representative animal, was an essential part of the ancient worship. The statue of Amen was covered with the slaughtered ram's skin and "the actual remains of the bulls found in the Serapeum by Mariette show that in the nineteenth dynasty they were consumed by the worshippers."[1]

We have unequivocal evidence that in the earliest times of Egypt parts of the bodies of the dead were eaten by their children which was apparently done as an act of piety for the sake of preserving the souls of the deceased in the surviving generation. An explanation of this strange custom is given by Professor Petrie in an exceedingly interesting article entitled "Eaten With Honor."[2] And since it is impossible to surpass this prominent scholar either in the presentation of facts or his exquisite humor, we make the following extensive quotations:

"Prejudice is strange. I suppose the average British house-keeper would rather travel in the same carriage with a gambler, or a rake, than with a cannibal; the former two she might call 'gentlemanly,' but her skirts would be gathered closer around her when she brushed past the latter. It is not by any means only the horror of presupposed murder; but, without that being in question, it is the use of human flesh as food which to modern respectability seems ghastly. There is no code of Mrs. Grundy about it, because it is outside of the very limited expe-

[1] *Religion and Conscience in Ancient Egypt*, p. 37.

[2] Published in the *Contemporary Review*, June, 1897, pp. 819 ff.

riences of that worthy lady. No, it is sheer mental prejudice against strangeness, which puts even the innocent and affectionate cannibal below the moral offender. Yet a large part of mankind are cannibals, and still more—perhaps all—have been so, including our own forefathers, for Jerome describes the Atticotti, a British tribe, as preferring human flesh to that of cattle.

"Does the intuitionist object to the principle? Yet he agrees that intuition varies from land to land and age to age; that each people are only responsible for acting up to the code of their own time. And the successors of the Stoics should be the last to live on hollow prejudices.

"Does the utilitarian object? Yet one main purpose of the custom is utility; in its best and innocent forms it certainly gives the greatest happiness to the greatest number. And the successor of the Epicureans should be the last to object to the mental and physical pleasures of preventing corruption by eating good meat.

"When, a short time ago, it came to light that a civilised people, at about 3000 B.C., who had exquisite handicrafts, whose children played with choicely wrought toys, while their fathers carried on a wide-spread trade in the Mediterranean—when it appeared that these people habitually cut the heads from their dead and ate some portion of the bodies, no one would credit the notion. Every sort of explanation was started; but the facts could not be gainsaid, and the broken marrow-bones and piles of ribs and vertebræ told plainly how the Libyan invaders of Egypt had honored their beloved dead.

"And now this year it is found that one of the grandest and most capable people that ever lived—those who built the splendid masonry of the Pyramids, at once the greatest and most highly finished works of man; who carved some of the most lifelike statues, who organised society and labor on a great scale, who treasured a delicate moral feeling—that many of these people reverently buried the bones of their dead after elaborately removing all the flesh. Why they did so we can hardly doubt when we look at the ways of other races.

"When we classify the motives of cannibalism that are recorded, we find that in more than half the races mental motives prevail, and in rather less than half the physical motives of hunger or pleasure. We may roughly classify the motives thus:

	PER CENT.
Honor, kindness, future good, love.	20
To obtain strength or magic results	19
As a ceremony, or to acquire position. . . .	10
As a punishment	5
	54
From hunger or need of food.	18
From preference as food	28
	46

The higher motives of honor and kindness prevail mostly in Asia, Australia, and South America, but seem to be unknown in Polynesia, North America, and Africa. The Thibetans considered it a glorious burial for their honored elders to be eaten;

some Australians also eat the dead with the greatest and most solemn honor; and the Tupi and Capanahuas in South America did likewise. Besides this, it is often a matter of kindness and love for the dead. The Cucumas of South America said that 'it was better to be inside a friend than to be swallowed up by the cold earth.' And who will say that they are wrong? Such seems to have been the main sentiment in that quarter of the world, as it appears again among the Botocudos, Tapuyas, Mayoruna, Mundrucu, and Guyanis. The idea of protecting the dead from decay and putrefaction, which would befall them in the ground, and giving them a kindly and affectionate disposal among their friends and kin, is as far removed as possible from any brutality or baseness. In Central Australia the Yulugundis have a still more touching feeling; when lovers are parted by death, the survivor ensures that they shall be united, in death if not in life, by consuming part of the dead. In Asia also we find the Samoyeds and Ostyaks saying that the elders will have a better future if eaten; and a tribe of the Gonds near the source of the Nerbuddah eat those who are fatally ill or aged as 'an act of kindness.' And in ancient times 'the Massagetae and Derbices thought it a most miserable end to die of sickness, and killed their parents, relatives, and friends who had grown old, and ate them, preferring to do this themselves rather than leave it to worms,' as Jerome tells us. It is thus evident that there is a widely-spread sense of protecting the beloved dead from the chilling loneliness and corruption of the grave by thus dividing the body among the survivors. We are so apt to think that delicacy of feeling must be unknown among those who differ much from ourselves, that we always underrate the motives of lower races. Often we may find a far higher and deeper sympathy shown by them than in anything to which we are accustomed. . . .

"Other motives, for the benefit of the living, are also usual. The idea that eating the heart of a lion will make a man brave, or the legs of a deer will make him swift, is a common one in many parts of the world. And thus, by the same process of analogy, the Queenslanders will eat a great warrior who has died, to obtain his valor, or a dead baby in order to get its youth, the old people thus seeking rejuvenation. Among many other Australians this analogy is also powerful. In North America the Tlinkets thus consume the bravest who have fallen, and in the south the Yamas suck out the marrow from the bones in order to acquire the soul. Many other tribes in both America and Africa eat the flesh from reasons vaguely described as religious or superstitious. Certainly they expect to acquire some power and virtue by the custom. . . .

"Lastly, the eating is a matter of hatred, as a punishment to criminals, among the Tatars, the Aghora in India, the Battaks of Borneo, and other peoples; this is probably to prevent the dead returning to be avenged on the living; as the Greenlanders say that a slain man can avenge himself on his murderer by rushing into him, which can only be prevented by eating a piece of his liver. . . .

"Thus we see that, quite apart from the use of human flesh simply as food, in the majority of tribes the mental desires are prevalent, to honor or benefit the

dead, to obtain their virtues, to acquire ceremonial position, or, lastly, to prevent their haunting the survivors.

"The great moral objection to cannibalism is, no doubt, that it may lead to murder; and this is the special blot on African cannibalism. . . .

"Primitive man was omnivorous in all probability, and had no objection to eating flesh of any kind. Such at least is Dr. Steinmetz's conclusion. . . ."[1]

The drinking of the blood of human victims, who were sacrificed on special occasions and may originally have represented the deity itself, was an ancient institution which was still practised now and then in historical times. Herodotus (III., 4–11), speaking of the conquest of Egypt by the Persians, tells us of Phanes of Halicarnassus how he betrayed the country to Cambyses and concludes his report with a description of a terrible blood covenant which the Greek mercenaries of the Egyptian king celebrated:

"Then they brought on the sons of Phanes, one after the other, and killing them let their blood run into the mixing bowl, which done they poured wine and water to it, and when all their allies had drunk of the blood they began the battle."[2]

Sallust also tells us that Catilina and his band practised a similar bloody rite when they took the oath not to betray the secrets of their conspiracy.[3]

Human flesh and blood being used for sacramental purposes in the interest of preserving life, naturally came to be thought of by the superstitious as the most effective remedy against fatal diseases.

Even in the days of Tertullian the religious rite of drinking blood and eating human flesh, not in a symbolical sense as prac-

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[1] "Endokanibalismus" in *Mitth. der Anthrop. Gesellsch.* Wien, XXVI., 1.

[2] "Μετὰ δὲ ἐγινέοντες κατ' ἕνα ἕκαστον τῶν παίδων (τοῦ Φάνεω) ἔσφαζον ἐς τὸν κρητῆρα, διὰ πάντων δὲ διεξελθόντες τῶν παίδων οἴνόν τε καὶ ὕδωρ ἐςεφόρεον ἐς αὐτὸν, ἐμπιόντες δὲ τοῦ αἵματος πάντες οἱ ἐπίκουροι οὕτω δὴ συνέβαλον."

[3] Sallust speaks of it as a rumor, but the mere rumor proves that such ideas which are survivals of pristine savage beliefs still haunted the minds of the people in the times of Julius Cæsar. The passage reads as follows:

"Fuere qui dicerent, Catilinam oratione habita, quum ad jusjurandum populares sceleris sui adigeret, humani corporis sanguinem vino permixtum in pateris circumtulisse; inde quum post exsecrationem omnes degustavissent, sicuti in solemnibus sacris fieri consuevit, aperuisse consilium suum atque eo dictitare fecisse, quo inter se fidi magis forent, alius alii tanti facinoris conscii." Sallust. Catil. 22.

ticed in the Christian sacrament, but literally and actually, was still haunting the minds of the people. Tertullian, addressing in his *Apologeticus* the Pagans, enumerates several instances of Pagan practices and exonerates the Christians of the false accusation of slaughtering and eating an infant at their communion. Tertullian says (*Ap.*, § 9):

"As to meals of blood and such tragic dishes, read—I am not sure where it is told (it is in Herodotus, I think)—how blood taken from the arms, and tasted by both parties, has been the treaty bond among some nations. I am not sure what it was that was tasted in the time of Catiline. They say, too, that among some Scythian tribes the dead are eaten by their friends. But I am going far from home. At this day, among ourselves, blood consecrated to Bellona, blood drawn from a punctured thigh and then partaken of, seals initiation into the rites of that goddess. Those, too, who at the gladiator shows, for the cure of epilepsy, quaff with greedy thirst the blood of criminals slain in the arena, as it flows fresh from the wound, and then rush off—to whom do they belong? those, also, who make meals on the flesh of wild beasts at the place of combat—who have keen appetites for bear and stag? That bear in the struggle was bedewed with the blood of the man whom it lacerated: that stag rolled itself in the gladiator's gore. The entrails of the very bears, loaded with as yet undigested human viscera, are in great request. And you have men rifting up man-fed flesh? If you partake of food like this, how do your repasts differ from those you accuse us Christians of?"

EDITOR.

[TO BE CONCLUDED.]

CRITICISMS AND DISCUSSIONS.

THE BIBLE.

To the Editor of The Monist.

DEAR SIR:—I have received and read your article on the Bible. I am obliged to you for sending it to me, as it states so fully your views on the subject. I find that they are totally divergent from mine; in fact the chasm between us is so wide that I cannot attempt to bridge it. We disagree entirely on the most fundamental truths; and there is no common ground left from which to undertake the discussion of the case. I can say nothing that you have not already considered and deliberately rejected. Arguments which to my mind are clear and convincing have no weight with you, because you approach the subject with different prepossessions, and your primary principles are such as to exclude your acceptance of anything offered from my point of view. I must, therefore, respectfully decline your kind tender of the columns of *The Monist* for a communication from me on the subject.

Your philosophy is unintelligible to me. Your conception of God as an unconscious, impersonal (or as you prefer to say "superpersonal," whatever that may mean) norm moving and directing the universe in all its parts, instead of being the last result of scientific inquiry, is to my mind incapable of explaining anything. I cannot thus account for the existence of the universe or any of its multitudinous organic structures, or any of its endless adaptations, nor for animal life and especially that of man with its numberless manifestations. With my modes of thought I necessarily postulate a personal God infinite in his being and attributes, whose wisdom and power are displayed in his works, who has contrived and made all, and who guides and directs all to the accomplishment of His own glorious purposes. I then have no difficulty in conceiving that He may be pleased to reveal Himself to His intelligent creature man, and even after his alienation from his Maker by wilful transgression to institute measures for his recovery. And with this view I can understand how He might condescend to enter into intimate relations with one of the families of mankind to make it a nucleus from which influences may emanate over the rest of mankind. And I can imagine that in the act of establishing this relation in the first instance He, whose crowning work of grace is seen in the incarnation, might temporarily assume a human form and seal His covenant with Abraham

in a manner accordant with the usages of men, yet with a dignity which filled Abraham with awe as is shown in his humble but urgent and persevering petition on behalf of guilty Sodom. And I can see nothing derogatory in His arresting Moses on His way to Egypt by some means not particularly explained in the brief narrative—perhaps by a stroke of dangerous illness, the cause of which he understood—for no personal appearance of the Lord is spoken of; Moses was on his way to assume the leadership of Israel, and yet had neglected to have his son circumcised, which in that period, when worship was so largely symbolical, was the significant rite of initiation to membership in the people of God, the neglect of which was punishable with exclusion from the people. It was inadmissible that the leader and legislator of Israel should himself disregard one of its fundamental laws.

I can further conceive that in the early stages of religion, when it had not yet gained a firm foothold even among the chosen race themselves, and was in danger of being stifled by surrounding idolatry, measures of severity might be employed to put down and to eliminate corrupting influences, which are not permissible when it has gained more strength and can maintain itself in the midst of adverse surroundings. The Lord, who is the arbiter of life and death, who can devastate whole regions by earthquake and pestilence, by fire and flood, and none can question the righteousness of His dealings, even when we cannot understand their meaning, is competent to judge of crises occurring in a different age of the world, and in a totally different state of society, as we cannot in our imperfect knowledge of the situation. Men may execute a divine sentence, and so far forth be approved, and yet do it in a very improper way. The faults of good men, and especially of bad men recorded in the Bible, cast no discredit upon the Bible itself or its author.

Inspiration does not make the subjects of it omniscient; it guards them from error in declaring what is revealed to them. Paul knew by divine revelation that the Lord Jesus was to come again and that the dead were then to rise. But when that event would take place, he did not know, and did not pretend to say. The Lord Jesus tells us that this was known to God alone; and that he himself in his human nature did not know when it would take place. That the Apostle Paul should think that it might take place in his own life-time is not surprising. It might for all that he knew. And that the Lord Jesus might blend the destruction of Jerusalem with the great event in the end of the world which it prefigured is of the same nature with the appearance of the sun rising over the mountain tops which seem to be in contact with it. Our Lord's own words prevent us from imagining that he intended to reveal the time of his second coming, which he distinctly declares that in his human nature he did not know. The destruction of Jerusalem with its aggravating horrors took place in the lifetime of that generation which he was addressing. This was the pledge that gave assurance of all the rest. All was virtually accomplished when that pledge was fulfilled to the letter.

I know that all this means nothing to you. I have not said it with any expectation of convincing you. It is all waived aside by the philosophical principles with which you set out. I have merely wished to justify myself from my own point of view, and to show that I can consistently believe that the Bible is the revealed word of God, and as such is of untold importance to every living man.

W. HENRY GREEN.

The Pines, Caldwell, Lake George, N. Y., Sept. 18, '99.

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[This letter, which is a terse delineation of the old orthodox position, written by the most representative thinker of the Presbyterian Church in this country, sums up the traditional conception of the doctrine of inspiration in such a lucid and forcible form, and is at the same time pervaded by such a firm spirit of conviction, as to merit the consideration of all who wish to weigh both sides of the problem. It was written as a private communication, but the editor asked for and received permission to publish it in the columns of *The Monist* as a reply to the editorial article of the October number. Professor Green, however, wishes it distinctly understood that it does not contain the full argument which can be made for his attitude in the momentous question at issue. He does not undertake in these lines either to defend his own, or to refute the opposing, views of others, but is satisfied with a simple statement of his position.]

POTENTIAL THINGS.

In *The Monist* for January 1892, Dr. Paul Carus the Editor discusses the subject: "Are There Things In Themselves?" In the course of his arguments he refers to "potential existence and latent qualities," which he says "are fertile and useful ideas but we must beware not to employ them incorrectly."

But the fact is he has himself employed the term potential incorrectly, or in a manner that is misleading; and this has suggested the following criticism, and given rise to the remarks made and the arguments advanced on the subject of "Potential Things."

DEFECTIVE LOGIC.

The Doctor says: "We might express ourselves to the effect that the egg contains the potential existence of feathers, but with the same logic we might say the egg contains a potential chicken broth."

The defect in this statement consists in the misuse of the word potential. This word has definite meaning, as unmistakable as any word in the English language. But as here used it is wrested from its true and primary meaning and is employed in its secondary and broad sense which is ambiguous. It is here used as a synonym to and in the place of the word possible.

We correctly say the egg contains a *possible* chicken broth, when we refer to the fact that the egg contains the power of transforming and growing into a chicken, which may then be made into a broth. This is a possibility, i. e., it is possible that a chicken broth is the outcome of the egg. But the word potential cannot be used correctly in this connection.

In like manner when the Doctor says: the egg contains the potential existence of feathers, he refers to the possible outcome of the egg; to its being changed, possibly, into a chick, on which feathers will then grow and exist. He does not refer to the fact that the potency to grow the feathers on the chick is contained in the egg from which it was hatched. This is the real point at issue. Are there potential things? Does the egg which is changed into a chick contain potential feathers?

Now the word potential relates to potence and not to substance; to the formative force, not to the thing being formed. Things in a potential state consist in certain combinations of forces capable, under proper conditions, to give definite forms to substances. And "according to the law of transformation and equivalence of energy" the human mind is forced to conclude that, every thing that appears in the transformed and actual state of a thing must have had its equivalent in the former, or potential, state from which it was transformed. Therefore, as the chick is but the transformed state of the egg the conclusion that the feathers on the chick had their corresponding equivalence in the forces of the organic constitution of the egg, cannot be avoided. The mind persists in asserting that the power, at the proper stage in the orderly process of transformation and growth, to change certain constituents of the blood of the chick into feathers *inheres* in the egg, since it is a self-evident fact. We therefore make good, sound logic, as well as state a fact in nature when we say: the feathers of the chick are potentially contained in the egg, which is equivalent to saying: the egg contains potential feathers. But when we now apply this logic to the other case and say: A chicken broth is potentially contained in the egg, we shall, by analysis, see the fallacy.

NO POWER IN THE EGG TO MAKE A BROTH.

In the first case we find that the power to form and produce feathers on the chick is, in a latent condition, inherent in the egg. This power is not added to the chick from without after it developed from the egg, but it is a quality inherent in the constitution of the egg. But in the other case we find no inherent power to make the chicken into a broth. A broth can be made of a chicken, but the efficiency to make it is not contained in the chicken much less in the egg from which it is hatched. The chicken is a specialised substance which may be made into a particular broth, but the power to make the broth resides in the mind and will of the cook. We might say, the broth is potentially in the cook's brain after he has conceived the idea and concluded to make it; and that the chicken is substantially the broth—it being the substance of which the broth is made. For it is an axiom that a thing cannot potentially contain *that* which it has not the inherent power to

produce. Therefore, since the skill and power required to make a broth are not contained in the egg, nor in the chicken, but in the ingenious mind of man, it follows conclusively that the egg does not contain a potential chicken broth. But in the first case, it being a fact that the *possibility* of producing the feathers is contained in the egg and the *efficiency* in the full-fledged chick, *but in no outside agent*, —that all the glorious knowledge and inventive genius of mankind cannot produce them, it follows conclusively that the feathers are potentially in the egg. Hence the logical difference between the two statements.

IRON ORE NOT A POTENTIAL SWORD.

The same defective logic is contained in the Doctor's statement: "Any heap of iron ore can be called a potential sword." Here again the ambiguous, misleading word potential is employed in the place of the simple and plain word possible. All that can be truthfully said of iron ore relative to its becoming a sword is, that it is substance or material of which swords can be made. We can correctly say of a sword that it was substantially contained in the iron ore, but when we say it was potentially contained therein, we speak falsely.

The iron in the ore has the inherent quality, under proper treatment, to change into steel, but it has not the skill of forming itself in swords; that resides in another agent. And since it is the peculiar form of a piece of steel that makes it a sword, and the power to give it that form we find is contained in the mind of man we can therefore truly say: the sword is potentially in the skilful mind of man, but not in the iron ore. To bring out this point still clearer and more forceful we give the following illustration.

THE COLLECTED MATERIAL FOR A HOUSE NOT A POTENTIAL HOUSE.

Mr. Thrifty resolves to build a house. He employs an architect, prepares his plan and gets his drafts. He makes a contract with a builder for the construction of the house. He buys all the materials needed, from the foundation to the finish, and has them conveyed to the place where the house is to be erected. Now we cannot correctly call these collected materials a potential house. Though they comprise all the material needed for the house, and though they are intended to be constructed into a house, yet they are not a potential-house. For it is an axiom that, *For a thing to be a potential something else it must contain the power in itself, as a quality of its own nature, to become or produce that something else.*

Thus a tadpole is a potential frog, because it, and it alone, possesses the power of developing and producing a real frog.

But on the other hand, a heap of stones is not a potential wall, because it does not possess the power, as a quality of its own nature, to form or construct itself into a wall. It is the material of which a wall may be built,—a possible wall—and we may say that a heap of stone is substantially, or in substance, a wall, but when we say it is a potential wall, our statement is absolutely false. Likewise, the collected

material for Mr. Thrifty's house is substantially, or in substance, the house, but it is not a potential house.

Neither should we say that the house is potentially in the mind of the architect. Here we find it ideally. The architect, in his imagination or image-forming faculty, has the power to conceive and form an ideal house in his mind, i. e., *think* a house, and has the skill to transfer it from his mind to paper as a design; but in so doing he does not reduce his ideal house to the real—the materially constructed, finished house. The power to build the house is not contained in the architect's imagination, but in the mind and brain of the skilled mechanics. The mason has the idea of a wall impressed on his mind, and has acquired the skill and power of dressing stones and constructing them into walls. Likewise the carpenter has acquired the skill to do the wood-work; the roofer to make the roof, and the plasterer to plaster the walls etc., and when the painter and the wall-decorator finally appear to give the finishing touch to the house, this is not adding something to the house, —as the Doctor declares that the growing feathers on a chick is adding something to the chick—for the painting and wall-decorating were understood and included—were contained in the contract made by Mr. Thrifty with the builders, in like manner as the power of growing feathers on the chick was included in the persistent forces immanent in the egg.

Thus we observe four aspects of the one object—the house ideally in the mind of the architect; the house potentially in the mind of the skilled mechanics; the house substantially in the solid material of which it is constructed; and the complete, finished house. And these four aspects are present in everything produced or objectised by man: (1) The ideal conception; (2) the mechanical skill and power; (3) the substance or solid material in which to formally express and fix the conceived ideal; (4) the concrete finished object.

MORE LOOSE STATEMENTS.

Says the Doctor:

"We may say that the hen's egg contains a potential chick; but this is a mere mode of speech devised to say that the egg can be changed into a chick under certain conditions.

"There is no chick at all contained in the egg, and nothing that is like a chick The chick is something different in kind from the egg. The unity of the egg-cell organism in the yolk is radically different from the unity of the full-fledged chick."

Now we ask are these things so, or are they mere assertions based on surface observations? Taking up the last statement we inquire: Is the unity of the egg-cell organism radically different from the unity of the full-fledged chick? The word radically is here used in its broad sense. Primarily it relates to radix or root, and in this sense it follows logically that, for a thing to be radically different from another thing the two must necessarily rise or grow from different roots or primaries. But is such the case here? Are the organic forces that produce the egg-cell organ-

ism and hold it in its unity not the same persistent forces that subsequently organise the chick and hold it in its full-fledged unity? Botany teaches that the plant is epitomised in its leaves. Now in this case, is the unity of the leaf radically different from the unity of the plant? Is it not a fact, that the unity of the leaf is a miniature expression of the unity of the plant? In the case of the chick the unity of its parents was epitomised in the egg and how can there be a radical difference between the unity of their several organic forms? Is the unity of the rays of light in the focal point different from that in the more diffused rays where they pass through the focalising lens? No; the unity of the concentrated forces in the egg-cell organism is not destroyed in the process of transformation of the contents of the egg, but is kept inviolate and is now expressed in the chick. The persistent organic forces of the egg-cell have simply diffused themselves in the chick and thereby extended their scope of action.

THE EGG THE SAME IN KIND AS THE CHICK.

The Doctor says: "The chick is something different in kind from the egg." Yes on their surface, in their physical expression, but not in their essential, or organic nature. The chick contains no organic forces that are different in their nature from those contained in the egg from which it was hatched. The difference cannot be in kind; it is merely in degree of physical expression. The nature of the persistent forces inherent in the egg-cell remains unchanged and continuous throughout the vital process from conception to dissolution. The chick is but the reincarnated expression—through the medium of the egg—of the persistent forces of its parents. In detail these several expressions may vary but not in organic constitution. Concentration (the egg) and diffusion—the organised structure arising from the egg; formation and transformation is the observed order of Nature.

The "formation of the chicken soul" is not "a new formation," as the Doctor says, in the sense that something has been "breathed" into it from without, or has been superadded to it, that is different in its nature from that which was primarily contained in the egg. It is merely the higher outgrowth of the inherent forces of the egg-cell, as the flowers and fruit on a tree are the higher out-growth of the inherent organic forces—the latent qualities of the tree. And in this case it is clear that, though the tree existed for years, bringing forth leaves and forming wood etc. but no flowers and fruit appeared, yet the power to produce the latter, at the proper stage of growth, was contained in the seed from which the tree grew. There is no power added to the tree from without to produce this higher or highest growth, but the tree preceding this one, on which the seed was formed, had such power. This was transmitted to the seed and now manifests itself on the succeeding tree as it had done on the preceding one. Just so with the chick. The parent birds that produced the egg had the quality of forming "the chicken-soul,"—as the Doctor expresses it,—and this was transmitted to the egg-cell, and at the proper stage of growth manifests itself in the chick as it had manifested itself in its parents. T

quality of soul-formation, is not "breathed" into the chick from without, by some extraneous soul force, but is inherent in the constitution of the egg-cell. The organic forces in the egg are the same in kind as those in the chick and in its parents.

SOMETHING LIKE A CHICK IN THE EGG.

That there is no organised, material chick in the unhatched fertilised egg is a fact; but to say that the egg contains "nothing that is like a chick," is an unwarranted assertion.

The adage is "like begets like," but if nothing is contained in a hen's egg that is like a chick, it is evident that nothing that is like a chick could come out of it.

We might say that a serpent's egg contains nothing that is like a chick; which is a fact. And for that very reason it cannot be changed into a chick. But inasmuch as the hen's egg, in its organic constitution, contains the inherited nature and qualities of the parent birds that produced it, it follows naturally and conclusively that it contains something that is chicken-like; and the proof of it is, it manifests the power of transforming the egg into an actual chick. In what the likeness consists, this is not now demonstrable, neither is it the point at issue.

THE HEN'S EGG CONTAINS A POTENTIAL CHICK.

To say "the hen's egg contains a potential chick," the Doctor asserts, "is a mere mode of speech devised to say that the egg can be changed into a chick under certain conditions." Here he would lead the reader from the true use of the word potential. The fact that a piece of cloth can be formed into a coat does not make the cloth a potential coat. It is in substance the coat, but the skill of making a coat is not contained in the cloth, it cannot form itself into a coat. It lacks this the necessary inherency which constitutes one thing a potential something else. In the case before us, however, the power of changing the egg into a chick is inherent in the organic constitution of the egg, and it is this *inherency* that constitutes it a potential chick.

Again, when we say the silk-worm is a potential moth or imago we state a fact, for the efficiency of changing into a moth is a quality of the nature of the silk-worm itself. But when we say the leaves which the silk-worm eats and converts into silk, *they* are potential silk, then we speak falsely. The leaves are in substance the silk, but the power of changing them into silk is inherent in the silk-worm, and therefore the silk is potentially in the worm.

Now, when we view an egg in the light of modern science we find it composed of two distinct realms or fields of activity in the process of its being transformed into a chick: namely, a formative field and a nutritive field. The former is positive or active, the latter is passive and reactive. The former is the field of nuclear substance in which the organising potency resides; the latter is the field of somatic or body plasma, the substance or material which is to be constructed into the physical body of the chick. According to Professor Weismann, the nuclear field is the

realm of real life, and the "body or soma is a subsidiary appendage," a "deciduous growth which arises round about the real links of life."

Thus in the realm of real life the chick is potential, and in the subsidiary real or body life it becomes phenomenal or active, and these two realms are included in the constitution of the egg. In the nuclear substance or realm of real life the chick is in some way perfectly formed. This may seem inconceivable, yet it remains a fact. Preformation, in some way or other, demands our recognition. And it is in perfect agreement with the logic of the expression: The egg contains a potential chick.

When we predicate of a thing that it *contains* something, we have *two* distinct ideas in our mind. As when we say the bottle contains wine. Here the bottle is one idea, and wine is the other idea. Just so when we say the egg contains a potential chick. Here, however, we do not refer to the egg-shell and its contents, as in the case of the bottle and its contents—the wine. No; here the concrete egg with its body plasma and nutritive potency constitute one idea; and the formative potency and organising efficiency—that *unity* of organic forces which is capable of transforming the contents of the egg into a chick, inherent in the nuclear substance of the egg-cell in the yolk, constitute the other idea. The concrete egg contains an abstract and unknown quantity. And when we reduce this supersensuous, unknown quantity to a physical expression—not by any rules of mathematics but by gentle heat in an incubator or under a hen—we find it equals a chick. Hence the unknown quantity inherent in the egg being equal to a chick, our conclusion that the hen's egg contains a potential chick is correct.

DANIEL BRIGHT.

PHILADELPHIA, Pa.

EDITORIAL REPLY.

Criticism is always welcome, and since Mr. Daniel Bright has discovered "defective logic" in an article of mine entitled "Are there things in themselves?" I take pleasure in publishing his arguments and will answer them as briefly as the complicated problem will permit.

In the article referred to I deny the existence of "Things in themselves" if the term be taken in its rigid meaning.

The thing is constituted by a definite form, using the word "form" in its evident significance. A chair is a seat with legs and a back serving the purpose of sitting. The form of the chair is the "chair in itself," if that term has any meaning at all. There is not an unknowable "chair in itself" of metaphysical existence which germ-like exists as a power, or a force, or a potency in the material that is being turned into a chair by the skill of a carpenter.

Accordingly we may say there are "forms in themselves," but not "things in themselves." Initselfness, or absoluteness, is not any thing substantial but purely formal. Those eternal uniformities which are classified by scientists as laws of

nature are the conditioning factors of things. They are the moulds of all beings animate as well as inanimate; but there is not any "potentiality" which germ-like, in a process of unfurlment, evolves the actualised things of real existence. I said:

"Evolution is not, as the name suggests, a process of unfolding; evolution is, as Christian Friedrich Wolff calls it, an 'epigenesis,' i. e., the process of the additional growth of new formations. The chick is something different in kind from the egg. The unity of the egg-cell organism in the yolk is radically different from the unity of the full-fledged chick. The former shows traces of irritability but not of consciousness, while the latter exhibits unmistakable symptoms of psychical activity. The formation of the chicken-soul is a new formation as much as the growth of feathers. The feathers of the chick are an additional growth; there are no latent feathers in the egg. We might express ourselves to the effect that the egg contains the potential existence of feathers, but with the same logic we might say the egg contains a potential chicken broth."

Here the term potential is incidentally introduced and the following remarks are made to show that potential existence is practically identical with that which is possible, but cannot denote either mystical "forces," or "metaphysical entities," or "things in themselves." I said in the same article:

"The terms potential existence, and latent qualities are fertile and useful ideas but we must beware not to employ them incorrectly. Any heap of iron ore may be called a potential sword. This is a mode of speaking which expresses the possibility that the ore can be changed somehow into a sword. But the sword does not exist at all in, not even as a latent quality of, the ore. The ore has no latent qualities of that kind. Those qualities of the ore which represent the potential sword are very patent to everybody who knows the art of using them properly and changing them into an actual sword.

"We may say that the hen's egg contains a potential chick; but this is a mere mode of speech devised to say that the egg can be changed into a chick under certain conditions. There is no chick at all contained in the egg and nothing that is like a chick."

Having read Mr. Bright's criticism I see not one word in the objectionable passages which I would retract. I have used the word potential in the traditional sense as that which can be (*τὸ κατὰ δύναμιν*) and deny only that the egg (the thing which can become a chick) is or contains a chick. An egg is a plexus of physiological tissues, a thing which is radically different from a chick, the latter being a living animal, a physical entity, a being endowed on a small scale with sensation, intelligence and purposive action or will, all of which qualities are glaringly absent in the egg.

The quotation of the objectionable passages in their context seems to me sufficient to dispose of Mr. Bright's criticism were the problem not more complicated and deserving of more elaborate treatment. The opposition which Mr. Bright makes

is based upon a difference between the egg and the chicken broth. I am quite aware of this difference and would be the last to deny its importance. I only deny that there is any difference between the two except a difference of kind. The difference is that in one case the most salient factors lie in the egg itself, and in the other they lie somewhere else; but in neither case do they lie exclusively here or there, nor is the potentiality any mysterious disposition in the egg, as a thing that remains identical through all changes.

In Aristotle's philosophy the term potential (*κατὰ δύναμιν*) plays an important part. The potential is contrasted with the actual i. e., that which has been perfectly realised (*κατὰ ἐντελέχειαν*). The art of architecture may be called the potentiality of housebuilding as may also the material of which houses consist:

Schwegler says (as quoted by Fleming in his Vocabulary of Philosophy p. 11, *sub voce* ACTUAL):

"The relation of the *potential* to the *actual* Aristotle exhibits by the relation of the raw material to the finished article; of the unemployed carpenter to the one at work upon his building; of the individual asleep to him awake. *Potentially* the seed is the tree, but the grown-up tree is it *actually*; a potential philosopher is the philosopher not philosophising; even before the battle the better general is the potential conqueror; in fact, everything is potential which possesses a principle of motion, of development, or of change; and which, if unhindered by anything external, will be of itself. *Actuality* or entelechy, on the other hand, indicates the perfect act, the end as gained, the completely actual (the grown-up tree, e. g., is the entelechy of the seed-corn), that activity in which the act and the completeness of the act fall together, e. g., to see, he thinks and he has thought, he sees and he has seen, are one and the same, while in these activities which involve a becoming, e. g., to learn, to go, to become well, the two (the act and its completion) are separated" (Schwegler, *Hist. of Phil.*, Stirling, p. 108).

The words "potential" and "possible" are derived from the same root, and mean etymologically the same, signifying that which can be. But potential is more closely related to the noun *potentia*, i. e., power (*δύναμις*) of potency which conveys the idea of a dynamic conception of performing some deed or attaining some ideal aim. And this linguistic implication actually seems to dominate Mr. Bright's thoughts, for again and again he speaks of the "power" of the egg to become a chicken, which "is a quality inherent in its constitution." He also speaks of "the persistent forces immanent in the egg." He says "the word potential relates to potence and not to substance" and defines potential as follows:

"For a thing to be a potential something else it must contain the power in itself, as a quality of its own nature, to become or produce that something else."

Aristotle's conception of potential differs from Mr. Bright's, but we shall not enter into questions of purely historical importance. Everybody has to a certain extent the right to form his own terminology. But then we must insist upon the utter indifference of the dynamical forces stored up in the egg and the paramount

importance of the form in which they are arranged. We do not know the secret of this arrangement, but we know that the energy stored up in an ostrich egg or in an eagle's egg, or in a chicken's egg, is not the determinant factor of the future fate of the egg, but its constitution, viz., the arrangement of its chemical ingredients. Neither the mass of the germ substance which is minimal seems essential, nor do the forces of the tiny little bit of energy contained in the substance seem to play a prominent rôle in the process. Everything depends upon the form which in its minute details is still unknown to us. Forces or power (viz., mechanical energy) is added to the egg from the outside by brooding and also some substance, especially oxygen, is admitted through the process of the shell. The external world co-operates in bringing about the result of the development of the egg; and this co-operation is indispensable for bringing about this wonderful transformation which changes an egg into a little chick.

There is a little German toy in the market called, I believe, "The little artist." It is a figure with a pencil in hand, the arm being moveable and connected with levers leading to a wheel underneath upon which a pattern of two lines cut in zinc can be placed, the one determining the vertical position of the pencil, the other the horizontal. The pattern can be changed, and the little artist draws pictures as soon as the crank is turned, and, of course, the pictures depend upon the pattern. Here the pattern is the potential picture. The pattern is not a picture at all; it contains no picture, nor does it in any way resemble a picture. Yet the form of its lines will, if inserted into the little machine, guide the pencil and thus produce a definite picture.

Potentiality is neither a matter of power nor of substance, but of form.

Mr. Bright believes that if an egg is transformed into a chick, it must contain a chick. He says:

"The adage is 'like begets like,' but if nothing is contained in a hen's egg that is like a chick, it is evident that nothing that is like a chick could come out of it."

The truth is that very frequently and undeniably things of one kind are changed into things of another kind. A heap of nebulous gases is changed into a solar system; the fiery surface of a planet cools down and is transformed into a theater of life and moral aspirations. Hemp is woven into clothes, worn to rags and at last turned into paper to become books. Everywhere we are met with transformations where radically new things appear which can not be said to have existed before potentially anywhere except in the ideal realm of the possibility conditioned by the eternal laws of form and actualised through the changes wrought by combination and separation.

Mr. Bright's error is based upon a misconception of what he calls the equivalence of energy. He says:

"According to the law of transformation and equivalence of energy the human mind is forced to conclude that everything that appears in the transformed and actual state of a thing must have had its equivalent in the former, or potential, state

from which it was transformed. Therefore, as the chick is but the transformed state of the egg the conclusion that the feathers on the chick had their corresponding equivalence in the forces of the organic constitution of the egg, cannot be avoided."

Every thing is some thing and can in combination with other things be changed into innumerable new things. The new things are the potential things of Aristotle and to speak of them as being contained in the old things is, to say the least, very misleading. Mr. Bright says:

"When we say a thing *contains* something we have distinctly *two* ideas in our mind. As when we say the bottle contains wine. Here the bottle is one idea and wine is the other. Likewise when we say the egg contains something. In this case, however, we do not refer to the egg-shell and its material contents, as in the case of the bottle and its contents—the wine. But the concrete egg with its nutritive potency or energy is one idea; and the formative potency, or organising efficacy inherent in the egg-cell in the yolk is the other idea. The egg in its totality possesses these two distinct classes of energy—formative and nutritive. The concrete egg contains an abstract and unknown quantity. And when we reduce this supersensuous, unknown quantity to a physical expression,—not by any rules of mathematics, but by gentle heat in an incubator or under a hen,—we find it equals a chick."

Aristotle's usage of the term potential and actual is not very satisfactory; but when he says that certain things are possessed of potentiality, he uses a figure of speech meaning that they can be transformed. Mr. Bright insists on the egg as containing a potential chick, saying that "the concrete egg contains an unknown quantity" which by brooding is reduced to a physiological expression, called a chick!

That "unknown quantity" of which Mr. Bright speaks is no quantity, but a quality; it is a definite form, analogous to the form of a pattern in machines.

We must insist that the term potential, convenient as it may be for many purposes, is dangerously ambiguous. The potential is that which will be or may be, but it is not contained in the things from which, or in minds of people through whom, it is actualised.

An American boy baby may be called a potential president of the United States, but for that reason he does not contain an unknown quantity of any kind. Aristotle speaks of dissolution as inherent in compound things, (book IV., ch. xi.) which means that all living bodies are subject to decay, or to use Mr. Bright's terminology "contain potential corpses."

Obviously, it is dangerous to take figurative terms seriously and understand them in a literal sense.

And why is the potential egg of special interest? Because it is the typical illustration of a wrong conception of the development of the world, based upon a false allegory. The world egg plays a prominent part in almost every mythology.

"The difference between an egg and the primitive condition of world system, is this: A chicken existed before the egg, and the egg develops a chicken because it represents the life-memories of many millions of chicken ancestors. The egg would not exist but for the hen. The hen transmits certain forms of motion which are the sum total of all the experiences of herself and her ancestors to a part of her body, *the ovule*. The ovule, when fertilised, grows and is excreted as an egg.

The famous question, "Which was first, the hen or the egg?" must be answered: "Neither." Living protoplasm was first, which under certain conditions produced the egg-bearing hen.

In a certain sense a nebula contains all the conditions for producing a planetary system and, on the surface of its planets, of living beings such as we are. Matter, the substance of a nebula, it must be assumed, possesses the qualities of motion and irritability, which by proper organisation become sentiency. The world-material can, merely through certain combinations in a long process of evolution, develop the higher forms of existence, organic life, consciousness and rational will. This evolution is inherent in existence through that impalpable something which we call laws of form; yet there is nothing in the world-process that evolves transmitted memories containing a special form of life and that form only. There is no world-hen who imparted her experiences and intelligence to the produce of her creatures.

A stellar nebula is a potential solar system, animated on its planets with rational beings. So the egg is a potential chick. The development of both is determined by their constitution, but while in the former the eternal laws of nature seem to play the most important part, the latter is typically a repetition of prior action and is a new start for the reappearance of the type of its ancestors.

The law of the conservation of matter and energy declares that the sum total of all energy and the sum total of all matter remain constant in the entire system of the universe. That which is not constant is the form; and new forms can be produced from the old forms in an unlimited amount of possibilities. But the changes of form take place according to eternal laws of form the recognition of which assists us both in tracing the process of evolution and in forming as well as realising our ideals of life. P. C.

BRINTON'S THEORY OF THE ORIGIN OF RELIGION.

In the winter of 1891 a movement was started in Philadelphia for the purpose of instituting popular courses in the History of Religions. Each course was to consist of from six to eight lectures and the engagement of lecturers, choice of subjects, etc., were to be in the hands of a committee chosen from different cities and representing various institutions and associations. The first course was given by Prof. T. W. Rhys-Davids, Ph. D., LL. D., of London, England, on the subject, The History and Literature of Buddhism. As the second lecturer, the late Prof.

Daniel G. Brinton of Philadelphia was chosen, and he delivered a course of six lectures on the Religions of Primitive Peoples. These lectures were delivered during the winter of 1896–1897 and they have since appeared in a neat volume issued by G. P. Putnam's Sons of New York.

Dr. Brinton, who at the time of his death held the chair of American Archæology and Linguistics in the University of Pennsylvania, was a leading authority on the language and customs of the American Indians and on Anthropology in general. As is well known, he was a careful student of his chosen subjects and a most prolific writer. In several of his books and articles he turned his attention to religion, but nowhere has he given the subject so thorough a treatment as in his latest work. He there presents, with a large accumulation of facts in regard to early religious beliefs and practices, a theory of the origin of religion which it is the purpose of this article to consider.

As is usual with writers on religion Dr. Brinton begins by stating the various theories in regard to its origin and after a brief consideration of each rejects them all. It is necessary, he says, if we are going to apply the scientific method to the study of religions to offer an intelligible explanation of their existence, an explanation which is verifiable and which holds good for all of them, primitive or developed. This, he thinks, has not been done up to the present time.

Having cleared the ground, he lays down the proposition that "the psychic origin of all religious thought is the recognition, or, if you please, the assumption, *that conscious volition is the ultimate source of all force.*" It is his belief that "beyond the sensuous phenomenal world, distinct from it, giving form, existence and activity, lies the ultimate, invisible, immeasurable, power of Mind, of conscious Will, of Intelligence, analogous in some way to our own; and—mark this essential corollary,—*that man is in communication with it*" (p. 47).

This, on the face of it, may not appear to be markedly different from the theories in vogue since Tylor and others set forth the principles of animism, but it is quite different as the careful capitalisation of mind, will, and intelligence in the above quotation might be taken to indicate. His real postulate is that the primitive man recognised that all he saw about him was but a manifestation of an impersonal, spiritual Power lying beyond or behind reality. That he accredits the primitive man with the degree of philosophic insight necessary for the recognition of this rather modern philosophic doctrine is evident from many passages in the book. I will quote but one: "The idea of the world-soul, manifesting itself individually in every form of matter from the star to the clod, is as truly the belief of the Sioux Indian or the Fijian cannibal as it was of Spinoza or Giordano Bruno" (p. 135). I do not misrepresent his theory then, when I say that his fundamental postulate is that of a universal intelligence which is recognised by primitive men. He does not seem to have reflected upon the well-known fact that Spinoza was persecuted and Bruno was burned for their belief in the animation of all matter.

Now, the question at once arises, How did this fundamental idea, this primitive

"conception of the Divine" originate? Dr. Brinton is ready to explain it, and in attempting to do so he resorts to a method which is ingenious, whatever we may say of its scientific value.

We all know what an interesting region in psychology is that known as the subliminal consciousness. We know that, as yet, only its boundaries have been explored. We know not what curious facts its further exploration may reveal. It is unsafe to predict what may or may not be found in it. I know not what may have induced Dr. Brinton to turn to this comparatively unknown territory for an explanation of the fundamental religious idea; but, at all events, he does do so and sets it forth with all the confidence and satisfaction of a discoverer. It is not the product of any conscious act of intelligence or any process of voluntary reason, he tells us, it comes "from the unknown, the unplumbed abyss of the sub-conscious mind." "In the subliminal consciousness, or psychic automatism, I have revealed to you," he declares, "the true source of the conception of the Divine."

It is difficult to see how this conception of the Divine could be derived from the subliminal consciousness, unless in the subconscious action of the mind we have a real manifestation of Divinity, and Brinton does not seek to avoid this conclusion. He evidently accepts it, but he points to no facts to prove it; simply because there are no such facts. One terminus of his thought lies beyond the boundary of fact and consequently of science. Even if we should grant that he has discovered the true source of the conception of the Divine, we should still wonder by what authority he gives so high a value to a conception derived from so uncertain a source. The lameness of his whole argument may be seen in the following statement: "Who dare deny," he says, "that in their unconscious functions our minds may catch some over-tones, as it were, from the harmonies of the universal intelligence thus demonstrated by inductive research (sic) and vibrate in unison therewith?" Who, indeed? But, on the other hand, who dare affirm such a proposition as a scientific fact. It seems to the ordinary mind that such uncertain statements should have no place in a book which professes to apply the scientific method to the study of religions.

With this universal intelligence now and then revealed through subconscious mental action, we can see why Animism, the belief in individual spirits, or Comte's theory of the progress of religious development through fetishism, polytheism, and monotheism, must, in Dr. Brinton's opinion, fall to the ground. There is no real distinction between fetishism and idolatry, for the thing worshipped is not the object itself, or an individual spirit resident in the object, but "a transcendental *X*" manifesting itself through the object.

Now, I think it is easy to show, and it has been shown by Tylor and others, that in order of time the idea of individual spirits preceded the idea of a world spirit, and it is difficult to see how Dr. Brinton could contend for the opposite in the face of the vast array of facts which gleam from almost every modern work on anthropology and even from the pages of his own book. It would seem that the

general idea of a universal intelligence, when reached at all, would be arrived at either from a generalisation of beliefs in individual spirits, or from a philosophic speculation in regard to the nature of the universe far beyond the mental ability of the primitive man. What does the primitive man know about will or mind? Nothing at all. His first generalisation is, perhaps, in regard to objects which move without visible cause. He has accomplished, for him, quite an intellectual feat when he concludes that such objects are alive and infers that they are individual beings like himself. The natural outcome of his thought is Animism. But, Dr. Brinton declares that while Animism, in one guise or another, "is common to all religions and many philosophies, it is merely a secondary phenomenon of the religious sentiment and not a trait characteristic of primitive faiths." But this declaration is denied by the very facts which he presents. Quoting a remark of Professor Sayce in regard to the early Chaldeans to the effect that to them the spiritual was that which manifested life and the test of life, which was movement, he adds, "this is universally true of primitive faiths." This seems much more probable than that in primitive faiths the universe was regarded as alive. Again, he does not seem to see the implication of his explanation of the process of thought by which the primitive man assigned mind to nature. It is illustrated, he says, in the action of any child, and he then uses the familiar illustration of the gratification of a child on seeing an object which has in some manner injured it punished as a living being. A similar process takes place in the mind of primitive man. "Wherever he perceives motion independent of a living being he assumes the presence of a conscious agent not visible to his senses" (p. 49). The obvious implication of this fact is Animism; but, Dr. Brinton does not see it so. It is much more likely that the primitive man regarded motion in nature as evidence of life in the particular object under observation than that he reached a conclusion that it was the immediate exhibition of a universal will. Dr. Brinton virtually presents the untutored savage as a primitive Emerson speculating on the doctrine of the over-soul. All that is true in his theory is to my mind animistic, and that which is not true is subjective and is carried to the facts, not found in them.

In illustration of the last remark I may refer to his theory of the subconscious intelligence as an explanation of the primitive religious conception. I know no better illustration of reading a theory into the facts, of carrying back one's own conceptions into the crude philosophy of primitive men. The "philosophy of the unconscious," the theory of psychic automatism, is modern. Suggestion and hypnotism have only recently been the subject of psychic investigation. But, since psychology proclaims, with more or less certainty, the existence of a subliminal consciousness, it is at once seized upon and carried back into primitive philosophy as an explanation of the thought of primitive man. This "unplumbed abyss of the subconscious mind" offers undoubted opportunities for angling; but it is surprising to find Dr. Brinton, a scientist, fishing out of it the primitive conception of the Divine.

But a still more unscientific proceeding is the identification of the subconscious mind with the Divine mind, and this, as I have said, Brinton virtually does. He speaks of the Shaman and the Medicine Man as having been "face to face with God, having heard His voice and felt His presence" (p. 58). They are inspired by a contact with the divine intelligence, and in this state of inspiration we find the "psychic development" of the primitive idea of the Divine, the notion of God.

Speaking of inspiration in this special sense, we are not surprised to find Dr. Brinton making far more of it than facts justify. With him such an almost mediumistic inspiration is the basis of every religion. He distinctly declares that there can be no religion without it.

Now, nothing seems more clear than that this idea and the spiritualistic conception of a doctrine of inspiration are a direct outgrowth of the phenomena of possession and obsession which are yet to be explained. It is quite gratuitous to say at this stage of psychological investigation, as Dr. Brinton does, that "the human soul, regarded in its origin as an emanation of the Divine, is in its nature omniscient, when in moments of ecstasy it frees itself from its material envelope" (p. 51). So-called inspiration may be due to the operation of the subliminal consciousness; but to refer one unexplained phenomenon to another unexplained phenomenon can hardly be regarded as a scientific explanation. There can be no doubt that the mental states now studied under suggestion and hypnotism, etc., have played a great part in all religions. But it cannot correctly be said that religion is due to them. Manifestations of the subconscious intelligence were, doubtless, to the primitive man like all other inexplicable phenomena, or, rather, like all other phenomena which he could explain on no other hypothesis than to assign them to the influence of the gods.

In the theory of Dr. Brinton, and in many passages in his book, there are evidences of a theological bias. Doubtless this bias, and his undue haste to utilise some half-formed conclusions in psychology, led him into the vagaries of his theory of the origin of religion. As evidences of this theological bias many passages could be cited, but one must suffice. In speaking of certain ceremonies connected with primitive religions he says: "The Psychologist sees in them all the same inherent tendency, the same yearning of the feeble human soul to reach out towards and make itself a part of the Divine Mind" (p. 191). We can easily imagine the palatability of such a remark to a certain class of theologians who have much to say about the bankruptcy of science.

There is one other criticism which applies not so much to Dr. Brinton's theory of the origin of religion, as to his idea of what constitutes religion. In my opinion he falls short of a true understanding of the nature of religion. Religion is not a "notion of the divine," as he implies; nor is it a belief, or a system of beliefs. If he had the true conception of the nature of religion, he could never say, as he does (p. 53), that there can be no religion without inspiration or that every religion is a revelation. Religion is not "a system of activities to obtain beatitude, blessing,

righteousness, truth, and wisdom, as the chief good by enlisting the good offices of unseen beings in the unseen world."[1] Religion should be carefully distinguished from beliefs about religion. Most of the attacks aimed at religion have been in reality directed against theology. The editor of this journal advocates with great earnestness and intelligence, a religion of science, but in the sense in which I use the term religion, and which, in my judgment, is the correct meaning when speaking of its origin, there can be no such thing. What is really meant is that the beliefs growing out of religion should be purified by science; that is, that there should be a science of religion rather than a religion of science. Religion, traced back to its origin, is the recognition on the part of primitive men, or of members of sub-human species, that there were powers or agents outside of themselves which might help them or harm them, and the desire to be in right relation with these agencies. The desire arose from fear of agencies which, by the primitive mind, were interpreted as spiritual, and the hope of propitiating these agents led to acts of worship. Religion appearing in the individual was through a sort of principle of spontaneous variation laid hold of by the social group and utilised in the construction of religious systems. Knowledge and belief, hope and desire, are all, then, at the basis of religion.

If this conception of religion is correct, the theory proposed by Dr. Brinton in his study of primitive religions is deficient in that it not only gives a poor explanation of the phenomena which it starts out to explain, but it also seeks to explain a phenomenon which is not religion.

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A STRANGE ATTACK ON SOME PHYSICAL THEORIES.

In the October, 1899, number of *The Monist* appeared an article by the Hon. Chas. H. Chase on "The Doctrine of Conservation of Energy in Its Relation to the Elimination of Force as a Factor in the Cosmos." The writer's main object is to show that all energy cannot be explained, or expressed, in terms of motion, and that force cannot be identified with kinetic energy. Whatever the validity of these theories may be (and they are certainly not original with Mr. Chase), I would like to call attention to some of the mathematical reasoning by which Mr. Chase claims to have established them beyond all doubt.

He starts his mathematical "demonstrations" by telling us that, in the collision of two inelastic bodies of masses m and m', moving with velocities v and v', the momentum M and the kinetic energy E, before collision, are given by the formulas, $M = mv + m'v'$, and $E = \frac{1}{2}mv^2 + \frac{1}{2}m'v'^2$; and, after collision, by the formulas, $M' = \frac{1}{2}(m + m')(v + v')$, and $E' = \frac{1}{2}(m + m')\frac{(v + v')^2}{4}$. He says that, ac-

[1] Major Powell in *The Monist*, January 1898, p. 187.

cording to these formulas, the quantity of motion remains unchanged by the collision, whereas the kinetic energy will "in general be different in magnitude, and $E > E'$"; that, by collision, therefore, some energy "disappears," but "motion" is "conserved"; that the energy E' is due to the total motion of the system, and that, therefore, if there is any potential energy, this energy cannot be due to motion, but must be due to force. All this line of argument he prefaces by saying that the theory that potential energy is a form of motion is an "obvious error," and that "the (mathematical) demonstration of the impossibility of such a position is so simple," that he is surprised to see that it has escaped the attention of expert mathematicians.

It will be seen that Mr. Chase has not concerned himself very much about splitting hairs. He has cut the Gordian knot by applying the all-powerful and most "practical" method of *averages*. To find the velocity of the impinging bodies after impact he simply takes the *mean* of their velocities before impact. This done, the rest might be expected to follow smoothly, according to mathematical principles. But even here Mr. Chase seems to have ideas of his own. He tells us that, *according to the formulas*, there is no loss of momentum; that is, we must have, $M = M'$, or $mv + m'v' = \frac{1}{2}(m + m')(v + v')$. It is easy to transform this equation and reduce it to the form, $m(v - v') = m'(v - v')$, and this requires that we should have either $m = m'$, or $v = v'$, or both $m = m'$ and $v = v'$. Mr. Chase's first unsuspected discovery is, therefore, when properly "generalised," that *all the bodies in the universe have either the same mass or the same velocity, or both the same mass and the same velocity.*

The other equation, $E' = \frac{1}{2}(m + m')\frac{(v + v')^2}{4}$, leads to an equally interesting and astounding conclusion. Suppose m' to be originally at rest. Then $v' = o$, and E' may be made as great as desired by increasing m'; and, since E is in this case independent of m', the difference $E' - E$ may be made as great as we please. That is, we may *create* any amount of energy. The application of this "new principle" to the vexed problem of perpetual motion is a simple question of mechanism. The second discovery of Mr. Chase is, therefore, that *with any amoun. of kinetic energy* ($\frac{1}{2}mv^2$), *however small, we may* CREATE *an unlimited amount of energy of the same kind.* This "law" can be applied in "practice" with most wonderful results. Thus, a 10,000-ton man-of-war, hit from beneath by a bullet weighing 2 or 3 ounces, could easily be hurled up into the air with a velocity of 1000 feet per second.

Of course, it is scarcely necessary for me to say that Mr. Chase's great error consists in assuming the velocity after collision to be a mean between the velocities before collision. It is well known that the final velocity is $M/(m + m')$, and that the final *molar* kinetic energy is $E - \frac{1}{2}\frac{mm'}{m + m'}(v - v')^2$.

Mr. Chase further concludes, from some simple mechanical formulas the exact meaning of which does not seem to be very plain to him, that "it is evident that

kinetic energy is not wholly dependent on matter and motion." Mr. Chase will not, we hope, accuse us of promulgating "errors" and "absurdities" if we tell him that, *by definition*, kinetic energy is energy due to motion; indeed, the term is often defined by mathematicians as a name given to the product $\frac{1}{2}mv^2$. What would a mechanician say to any one who told him that the velocity of a moving body does not depend upon time and space?

Prof. C. L. Morgan referred somewhere to the arguments of some vitalists founded on the principle that a force acting constantly in a direction normal to the path of a moving particle cannot alter the kinetic energy of the particle. This is a well-known principle of dynamics, and is found in every elementary text-book. Mr. Chase, however, takes the Professor and the vitalists to task, and says: "The vitalists to whom Professor Morgan refers were ignorant of mechanics, or he has misquoted them; and in either case he seems not to have discovered the mathematical absurdity involved." To expose this "absurdity," Mr. Chase assumes a particle moving in a straight line with a velocity a. When the particle is at a certain point, a force is "impressed" on it "sufficient to give it a velocity b," the direction of the force being normal to the path of the particle. He draws a parallelogram whose sides are a and b, and says that the resultant motion will be in the direction of the diagonal, with a velocity equal to $\sqrt{a^2+b^2}$. The kinetic energy of the particle, after the action of the force, will be $\frac{1}{2}m(a^2+b^2)$; that is, the force has increased that kinetic energy by an amount equal to $\frac{1}{2}mb^2$, and this is contrary to the principle maintained by (or wrongly attributed by Professor Morgan to) the vitalists.

Here again Mr. Chase seems to be somewhat confused. The principle in question affirms that a force does no work (this being another name for change of energy) when the path of its point of application *remains* normal to the direction of the force while the force acts. In the present case, we have an unconstrained particle, which, on being acted upon by the impressed force, leaves its rectilinear path and moves in the arc of a parabola (not in a straight line, as Mr. Chase seems to think). While the force acts, it is no longer normal to the path of the particle and does an amount of work whose measure is obtained by projecting the path on the line of action of the force, and multiplying the projection by the magnitude of the force. Perhaps Mr. Chase was thinking of an impact when he spoke of an "impressed force"; but this does not alter the general principle, the only difference being that here the force acts through a very short distance.

ANTONIO LLANO.

BOOK REVIEWS.

DIE WELTRÄTHSEL. Gemeinverständliche Studien über monistische Philosophie. Von *Ernst Haeckel*, Dr. philos., Dr. med., Dr. jur., Dr. scient., Professor an der Universität Jena. Bonn: Verlag von Emil Strauss. 1899. Pages, viii, 473.

A presentation of the world-problem is the subject of Professor Haeckel's latest book, and he apparently intends the book to be a summary and conclusion of his life's work. It contains a *résumé* of his studies in the line of natural science, viewed under a philosophical aspect, and presents as the solution of the world-problem the theory of monism. The book is written in the brilliant style for which all the writings of Professor Haeckel are known, and will not fail to make a deep impression upon the reading public.

Professor Haeckel complains in the preface that the nineteenth century,—a century of the development of natural science,—did not bring about a satisfactory clarification of the problems of philosophy. Philosophy, such as it is taught at the universities, is still far removed from the ideal which he would like to enthrone in its place. It is purely metaphysical and deals with abstract problems which have little or no foundation in fact, and make little or no use of the enormous treasures brought to light by the various natural sciences. On the other hand, the representatives of the exact sciences have become mere specialists, and turn their backs upon the problems of philosophy, thus ignoring a cognition of the deeper interrelation of the facts which they discover. Many scientists deem philosophy redundant. They do not see the woods but only single trees, while *vice versa* the metaphysicians see the woods only, without taking note of the trees; and the nature-philosophy, which would unite both in a harmonious world-conception, is still repugnant to large circles belonging to either of these factions. With the purpose of filling this gap, Professor Haeckel publishes his book on world-problems, which, though it may have shortcomings, is as he states at least honest from the beginning to the end, and expresses his deepest convictions as "the matured fruit from the tree of knowledge," such as he knows it.

The book is divided into four parts, treating first of anthropological, secondly of psychological, thirdly of cosmological, and lastly of theological problems. The

first part discusses man, the system of his body, his origin, his life, and the history of his race. The author then introduces us to the soul, calling the nervous substance "psycho-plasm," and objecting to a dualistic psychology, rejecting the immortality-idea as held by the dualistic philosophers. The basis of a cognition of the world is to him "the law of substance," by which he understands the preservation of matter and energy. The Christian God-idea is discarded as an impossibility on the same ground on which the dualistic theory of the soul has been found unacceptable.

In the concluding chapter, entitled "Solution of the World-Problems," he declares that the world-problems have been solved by the various natural sciences: astronomy, geology, physics, chemistry, biology, and anthropology. He grants that some problems, such as the origin of life, have not been definitely settled, but there is no reason on that account for mystification of any kind, because we can after all know positively that law governs the world, and that the monistic philosophy has proved a satisfactory solution. Haeckel concludes with Goethe's words: "According to eternal and iron laws must we all complete the circles of our being."

Professor Haeckel is the champion of mechanical and materialistic monism, and as such he is its best and most classical exponent. That he is frequently one-sided is well known, and we have repeatedly called attention to some of his shortcomings; but his one-sidedness is nothing in comparison to the one-sidedness of his opponents, the Ultramontanes and other anti-evolutionists. Professor Haeckel's readers will easily condone the vigorous language which he uses when exaggerating the crude conception of an antiquated theology. We venture to say that the Christian world (at least in America) also has moved onward, and I believe there will be few left among the ranks of clergymen who would still represent their God as "a gaseous vertebrate." On the other hand, Professor Haeckel might find some truth in the traditional religious ideas, such as is for instance the anthropocentric conception which he vigorously criticises. It is true after all that the world-process on earth culminates in man. In the struggle for life a number of living beings develop, and every one of them may regard itself as the center of the universe; but after all the tendency of the development of the world is to produce a rational being, and this rational being reveals best the harmony of the cosmos, as its purest and most ideal product. It is the development of the truly human which would lead men above the present defects of our civilisation, and help to cultivate the humanity of man by freeing our institutions from the barbaric relics of past ages, an aspiration which Professor Haeckel shares with all lovers of reform. In this line, especially on the reform of school and church, Professor Haeckel's remarks are quite in order, and he might find sympathy even among his very opponents.

Whatever standpoint the reader may take, he has in Professor Haeckel a man who is truly representative, and there can be no question that the book will make a strong impression. P. C.

EINLEITUNG IN DIE VERGLEICHENDE GEHIRNPHYSIOLOGIE UND VERGLEICHENDE PSYCHOLOGIE. Mit besonderer Berücksichtigung der wirbellosen Thiere. Von *Dr. Jacques Loeb*. Mit 39 Abbildungen. Leipzig: Verlag von Johann Ambrosius Barth. 1899.

Prof. Jacques Loeb has been doing sound and important work in his laboratory at the University of Chicago, and evidences of it have appeared from time to time in little monographs, some of which have been mentioned in former numbers of *The Monist*. The results of his labors are not without important consequences and appear calculated to throw new light on the vital questions of physiology, evolution, heredity, and the general principles of the natural sciences. We are therefore much pleased that he has now published the results of a great part of his labors in a condensed form in the present book, which is a continuation of the author's researches on the heliotropism of animals.

The author had shown that the heliotropism in animals is in every way identical with the heliotropism in plants. On the other hand the tropisms of animals are reflex actions or instinctive actions; for instance the flying of the moth into the light. As everybody knows, the generally accepted theory of reflex or instinctive actions takes it for granted that they are determined by specific structures in the ganglions. But this assumption became doubtful through the author's proof of the identity of animal and plant tropisms. Hence it was necessary to investigate whether the ganglionic theory of reflexes is not after all an arbitrary, unnecessary or even false assumption. The author contributes a number of facts which show that the reflexes are determined by the arrangement of the muscles or the contractile elements on the one hand and the sense organs or the irritable structures in the skin of the animal on the other, and that the central nervous system only acts as a protoplasmic conductor for the transmission of stimuli from the sense-organs to the muscles.

Among the proofs for this the following may be mentioned. In ascidians the whole central nervous system consists of one single ganglion which can easily be removed, but these animals differ from higher forms in that the stimuli can be transmitted directly from element to element of the body without the interference of the central nervous system. These organisms possess a typical reflex and if one touches them they close their openings and contract. The author found that the same reflex continues after the removal of the central nervous system. Hence this reflex cannot be determined by hypothetical specific structures in the ganglion, but must be determined by the arrangement of the muscles of the animal.

The author further shows that in higher animals matters are not different. The closing of the pupil under the influence of light is considered a typical reflex action in which the stimulus is carried through the optic nerve to the central nervous system and from here back through the oculo-motor nerve to the iris. Specific structures which determine these peculiar reflexes are considered to be located in the ganglia or centers for the reflex. Yet it has been known for a long time that in an excised

eye the same reflex action still occurs under the influence of light. In this case, of course, the light causes directly the contraction of the muscles of the iris. Hence this peculiar reflex is determined not by hypothetical structures in the ganglionic cells but by the arrangement of the muscular fibres of the iris. Another example is offered by the reflex of the bladder and the anus. It has been shown by Goltz and Ewald that these reflexes continue even after the destruction of the spinal cord.

Hence it is impossible that these reflexes are due to hypothetical specific structures in the ganglion cells; they must be due to specific structures and irritabilities of the peripheral organs themselves.

While we then become convinced that the central nervous system does not contain the specific structures for the reflex organs but is acting only as a conductor, and moreover, that in some cases the reflexes continue after the ganglia or the spinal cord are extirpated, it does not as yet follow that the ganglia or the spinal cord are redundant and without consequence. In another set of experiments Professor Loeb showed what the true function of the nerves is in such cases. Ascidians can exist, both with and without nervous system, but on determining the smallest intensity that is needed to produce their specific reflexes we find that a reaction is quicker in the animal with central nervous system than in the one from which it has been removed. This fact reveals to us that the central nervous system acts as a more sensitive and accelerating conductor. An animal without central nervous system or without spinal cord may be able to show a number of reflexes and instinctive actions and adaptations, but it would not be able to adapt itself quickly to rapidly changing conditions.

What the author said in regard to ascidians also holds good for animals with a segmental nervous system. An annelid or an arthropod may be considered as a colony of segments each of which is comparable to an ascidian. Each segment has its reflexes which depend, as in the ascidian, not upon structures in each ganglion, but upon the irritabilities of the sense organs of the skin and the arrangement of muscles. The only difference is that stimulation of one of these segments not only causes an activity in the stimulated segment but in the other segments too, as the various segments are connected with each other by conductive protoplasm.

What however becomes of the leading rôle which the brain is generally assumed to play by modern authors? Professor Loeb shows that this so-called leading rôle of the brain no more exists than the hypothetical reflex structures in the ganglionic systems. In annelids, for instance, spontaneous locomotion continues even if you cut off the head of the animal. If we dissect fresh-water planarians, even pieces without brain continue to make spontaneous progressive motions. It was formerly assumed that frogs, pigeons, and dogs without cerebral hemispheres would no longer be able to show any spontaneous motions, but the experiments of Schrader and Goltz prove this to be an error.

Professor Loeb grants that there are cases in which animals no longer make progressive locomotions after the loss of the brain. For instance, decapitated sea-

water planarians and the cray-fish without brain no longer walk spontaneously. But he adds that we cannot explain why the motion stops. It would be wrong to draw the conclusion that in these animals the brain plays the leading rôle over the rest of the ganglia. For if we take out the cerebral hemispheres and thalamus opticus in a frog the animal loses its spontaneity but if we take out a little more the animal not only moves again spontaneously but moves incessantly. The same is true for the shark. Hence if in some cases we find that after the loss of the brain or part of the brain an animal loses its spontaneity this phenomenon has to be explained in a different way from that of assuming that the brain has a leading influence over the rest of the ganglia.

The same may be said in regard to the leading rôle of the brain in the co-ordination of motion. The co-ordination of motion can according to Professor Loeb be explained through the mutual influence of the various elements of an organism upon each other, and an assumption of a specific organ or ganglion of co-ordination would have to be regarded as a mere anthropomorphism. In the heart for instance the co-ordination of the variously active elements is due to the fact that that element which beats fastest forces the other elements to beat in its own rhythm.

When Friedlander cut an earth-worm in two and connected the two pieces by threads, the posterior part moved in a perfectly co-ordinated way as soon as the anterior part began to creep. But in this case the co-ordinated motions of the posterior half cannot be due to any influence of the brain, and Goltz's experiments prove that matters are not different in dogs. The reason that in some animals the loss of the anterior ganglion or the so-called brain has a greater effect than the loss of any other ganglion is that in these animals the peripheral parts of the anterior segments, i. e., the head, possess a higher differentiation with more sense organs and more tentacles than in any other segment.

This conception of the segmental character of reflexes is also true for the vertebrates, but while it is easy to prove it for invertebrates it has not as yet been recognised or positively shown to obtain in higher animals. Physiologists have a tendency to localise the seat of reflexes too high, that is say, too near the brain. Professor Loeb believes that the central nervous system is not built upon any other plan in the vertebrates than in the arthropods but that the difference is only based upon the peculiarity of the vertebrates, viz., that each operation in vertebrates is accompanied by severer shock-effects than in the anthropods. This has led to a number of misunderstandings. In the horse-shoe-crab the organs of respiration (gills) are situated at the abdomen. The segmental conception of the central nervous system demands that the nervous organs where these respiratory motions are started be situated in the abdominal part. We find, indeed, that if we destroy all the rest of the central nervous system leaving only the ganglia of the abdominal segments intact, that the respiratory motions continue after a short interruption in a perfectly normal way. The text-books however say that in vertebrates respiration is not determined by the segmental ganglia of the respiratory muscles but by

the *nœud vital* in the medulla oblongata. The argument on which their claim is based is that if we destroy this *nœud vital* respiration stops; but in this case respiration stops on account of the shock-effect which the operation produces upon the respiratory segmental ganglia. For if we take a newly-born vertebrate in which the shock-effects of the operation are considerably less severe we find that after destruction of the vital point in a medulla oblongata the respiratory motions continue and the organs for the respiratory motions therefore must be situated in the segmental ganglia of the respiratory muscles.

The segmental theory is of importance for the theory of localisation. That injury to the different parts of the cortex cerebri produces definite and different effects, is due to the fact that the fibres from the various segmental ganglia of the spinal cord in the medulla enter the cortex in different spots. Hence the so-called centres of the cortex must be simply regarded as the spots where the various sets of nerve-fibres enter the cortex. But Professor Loeb insists that it does not follow from this that these spots are the special seats of various functions; for instance, that, vision takes place only in the so-called visual sphere. It is perfectly possible or even probable that the processes underlying the psychic functions, e. g., vision, take place in the whole of the central nervous system or the whole cortex cerebri. The author offers facts obtained from Goltz and based upon the phenomena of association and interference of simultaneous innervations which would go far to prove that "the partial-soul theory" is an impossibility. The disturbances of function which follow the destruction of any of these centres of the cortex are due to a shock-effect upon the segmental ganglia with which the various centres are connected, and Professor Loeb mentions a number of experiments which would corroborate this view.

The animal tropisms form a considerable part in the complex of phenomena which constitute the subject of comparative psychology. But as animal and plant tropisms are identical we must admit that plants possess consciousness too if we call the cases of animal tropisms psychic phenomena. And further as the tropisms can be reduced to physical and chemical phenomena we would have to admit that psychic phenomena accompany every process in nature. Thus we would reach ultimately the assumption of soul-endowed molecules and atoms. Professor Loeb shrinks from this assumption. He tries to show that the conclusion of pan-psychism can be avoided by defining consciousness as a function of associative memory. This is his criterion that proves the presence of consciousness. By associative memory he understands that mechanism by which a stimulus not only produces the effects determined by the inherited structure of the organism and the character of the stimulus but also those additional effects of their stimuli which have made an impact upon the same organism simultaneously with the first stimulus. A simple example of this is that the odor of a flower, a purely chemical stimulus, reminds us of the shape and color of the flower itself. But how can we find out whether an animal possesses associative memory? If an animal can be

trained to do things upon a signal which are not necessarily determined by the physical effect of the signal it must possess associative memory (for instance if a dog turns around upon hearing its name called or if an animal is taught to look for its food upon hearing a certain sound, etc.). The application of this principle gives the result that there is no trace of memory in Cœlenterates, in Echinoderms or in worms. Among arthropods and mollusks certain forms may possess associative memory but if this is the case it has yet to be proven. It is only certain that a number of vertebrates possess associative memory and hence are capable of having consciousness. Under the influence of narcotics, in the case of fainting, in deep sleep, associative memory comes to a stand still, but at the same time consciousness disappears too. On the other hand, in such cases where the existence of consciousness has been claimed and where no trace of associative memory can be found, a closer examination shows that the assumption of consciousness was due to a mistake. An example may be mentioned. If we injure a worm and the worm wriggles, we are inclined to believe that this is an expression of a sensation of pain. In this case the criterion for the presence of consciousness is based upon the assumption that the same cause produces in a human being similar motions which are accompanied by a sensation of pain. But Professor Norman has shown that if we cut a piece out of a worm and cut this in two, only the posterior half shows this wriggling motion, and if we go on dividing pieces of worms in every case the piece behind the cut shows wriggling motions while the piece in front of the cut does not show any motions which one might interpret as being due to a sensation of pain. Hence we come to the conclusion that a piece of a worm only has sensations of pain if it is behind the place of lesion while the same piece of a worm is devoid of the sensations of pain if it is in front of the lesion, which of course would be utterly absurd. The true explanation is that a stimulus in travelling backwards throws the longitudinal muscles into activity while the stimulus in travelling forwards throws the ring muscles into activity. In the latter case co-ordinated motions occur; in the former case the wriggling motions occur, but the interpretation that the latter are an expression of pain was wrong.

There are similar instances. Professor Bethe observed that if one cuts off the abdomen of a bee while it is sucking honey this injury does not disturb the bee in the least. The author takes up other instances in which psychic phenomena have been claimed among lower animals and shows that in these cases we have to deal only with erroneous anthropomorphic interpretations of simple mechanical effects of stimuli. Hence the author comes to the conclusion that consciousness exists only in certain species of animals and in these only after a certain stage of development has been reached. This view is opposed to the theory that consciousness is already present in the egg and develops together with the egg and increases with progress of its development. Professor Loeb ignores the facts of subconscious feelings and does not consider the theory that there are conditions of subjectivity in the atoms which are analogous to the consciousness of man. The subjectivity in lower

animals is mere irritability; it develops into sentiency, and then in higher animals into consciousness by what Professor Loeb calls associative memory, and is perfected in the self-consciousness of man. This by the way Professor Loeb holds is only possible from the time when a definite mechanism contained in the central nervous system, viz., the mechanism for associative memory, is fully developed, and that before this time no associative memory and hence no consciousness is possible. The sudden origin of consciousness need not surprise us as we see the same thing in the development of every other function. The heart beat is not contained in the ovum, and it is not developed gradually with the development of the egg but it appears after the heart is formed and after the heart has reached a certain structural development. The power of optical perception of space is a function of a certain form of eyes. Only such animals as have these eyes are capable of visual perception of space and even in those animals this power is not yet present in the ovum but only appears after the eye has reached a certain stage of structural development. What is true for the eye and its functions is true for that mechanism which Professor Loeb calls associative memory, without which consciousness is impossible.

The contents of the book are contained in nineteen chapters whose titles are as follows:

Ueber einige Grundbegriffe und Grundthatsachen der vergleichenden Gehirnphysiologie.—Ueber das Nervensystem der Medusen und über Automatie und Coordination.—Das Centralnervensystem der Ascidien und die Bedeutung desselben für Reflexe.—Versuche an Aktinien.—Versuche an Echinodermen.—Versuche über die Gehirnphysiologie der Würmer.—Versuche über die Gehirnphysiologie der Arthropoden.—Versuche an Mollusken.—Die Segmentaltheorie bei Wirbelthieren.—Halbkreuzungen, associirte Stellungsänderungen der Extremitäten und Zwangsbewegungen.—Beziehungen zwischen der Orientirung und Function gewisser Elemente der segmentalen Ganglien.—Versuche am Kleinhirn.—Zur Theorie der thierischen Instincte.—Centralnervensystem und Vererbung.—Kriterien für die Constatirung von Bewusstsein bei niederen Thieren.—Gehirn und Bewusstsein.—Centrentheorie (Functionslocalisation) und Segmentaltheorie im Grosshirn.—Theilseelentheorie und Localisation einzelner Erinnerungsbilder.—Ueber einige Angriffspunkte für eine künftige Mechanik der Gehirnthätigkeit.

DIE GEISTIGEN UND SOCIALEN STRÖMUNGEN DES NEUNZEHNTEN JAHRHUNDERTS. By *Dr. Theobald Ziegler*. Berlin: Georg Bondi. 1899. Pages, 714.

This volume gives us a synopsis of the history of thought in Germany during the nineteenth century. Beginning with 1800 and having sketched the three world-views that were then struggling for supremacy, viz,, the éclaircissiment, classicism and romanticism, the author characterises Schelling's nature-philosophy and Hegel's phenomenology, which came to be the predominant systems of the first

half of our century. The author devotes two chapters to Prussia's political restoration during the wars against Napoleon I., and to the political reaction that set in in consequence of it. Hegel came partly as a completion of the reaction, partly as a hope for the liberal elements inaugurating the era of "Young Germany," whose leaders were Börne, Heine, Laube, and others. Next, we find Hengstenberg pitted against Strauss, a revival of orthodoxy and of an emboldened liberalism; this is the age which made it possible for a Feuerbach to teach his most radical views of religion from the philosophical chair of a German university. The reaction following after the revolution of 1848 swept all liberalism away, and culminated in the supremacy of such men as Stahl, ending in pessimism and finally finding an expression in the acceptance of Schopenhauer's philosophy. Then the cry was heard "Back to Kant," as if all these decades of philosophical evolution had been in vain.

Our author says little about German philosophy after the restoration of the empire, and devotes the last chapters (which treat of the time from 1871 up to the present year) to the socialistic movements of our age, the culture-combat between the empire and the Roman Church, the aspirations of socialism and the social democracy, and the various symptoms of decadence as seen in anti-Semitism, the agrarian movement, the philosophy of individualism as represented by Nietzsche and Stirner, anarchism, etc., winding up with an appreciation of the poetry of the present as it finds expression in Sudermann and Gerhart Hauptmann. Although there is reason enough in the present conditions of German thought to turn pessimist, Prosessor Ziegler confesses belonging to the optimists, and hopes that the German nation will work its way to freedom through all its political and religious aberrations. In this sense he congratulates the German nation on the great hopes with which it is now entering upon the twentieth century.

Thirteen well executed portraits, among them Goethe, Schleiermacher, Hegel, Strauss, Robert Mayer, Bismarck, Lassalle, Marx, and Nietzsche, form a welcome embellishment to the book; the paper is good and the print is clear. That the book has an index is very recommendable, the more so as this is quite an exception in German works. κρς.

A History of Physics in Its Elementary Branches Including the Evolution of Physical Laboratories. By *Florian Cajori, Ph. D.*, Professor of Physics in Colorado College. New York: The Macmillan Company. London: Macmillan & Company, Ltd. 1899. Pages, viii, 322. Price, $1.60.

Dr. Florian Cajori has followed up his *History of Mathematics* with a *History of Elementary Physics*. The success of the *History of Mathematics*, which despite its high price and the necessarily limited circulation of such books has been a considerable one, is ample evidence of the appreciation which now generally obtains of the value of historical instruction in science. As in his *History of Math-*

ematics, so here Professor Cajori has interwoven a goodly amount of attractive biographical material into his expositions, which have not suffered thereby. The treatment of each subject is in periods and by centuries. The human interest of the book might have been even more enhanced, had Professor Cajori made use of a greater number of such illustrations as he has put into the first part of his book, and which exist in great profusion in physical literature—illustrations of the character of those used by Dahlmann in his German book of extracts from the great masterpieces of science (Engelmann, Leipsic). But the addition would probably have increased the bulk of the book beyond the author's and publishers' desire.

The chapter on the "Evolution of Physical Laboratories" is good. It is little known that the main great discoveries of physics, until very recently, were made in private homes entirely at private expense. "We know that Dulong expended "nearly all his wealth on apparatus. Fresnel conducted his immortal experiments "privately, and defrayed from his own resources the heavy expense for apparatus. "Foucault carried on most of his experiments at his own residence. On one occa- "sion savants flocked to the humble abode of Ampère in the Rue Fossés Saint "Victor to see a platinum wire, as soon as it was traversed by an electric current, "set itself across the meridian.

"Bernard, that prince of experimenters, worked in a damp, small cellar, one "of those wretched Parisian substitutes for a laboratory which he has called 'the "tomb of scientific investigators.' Gay-Lussac's laboratory was on the ground "floor and, to protect himself from the dampness, he wore wooden shoes." Now we have such magnificent temples of science as the great laboratory at Zürich, which cost three million francs.

The wealth of enlightenment and inspiration, too, that lies in the contemplation of the history of the great discoveries, furnishing arguments and illustrations quite applicable to the conditions to-day in other fields, may be seen from the following anecdote from Galileo's career. It was just after Galileo's discovery of the sun-spots. "His observations seemed to confirm the Copernican theory. The "cloud of opposition to Galileo began to gather. Some refused to believe their "eyes, and asserted that, while the telescope answered well enough for terrestrial "objects, it was false and illusory when pointed at celestial bodies. Others refused "to look through it. Among the latter was a university professor. Galileo wrote "to Kepler: 'Oh, my dear Kepler, how I wish that we could have one hearty "laugh together! Here, at Padua, is the principal professor of philosophy, whom "I have repeatedly and urgently requested to look at the moon and planets through "my glass, which he pertinaciously refuses to do. Why are you not here? What "shouts of laughter we should have at this glorious folly! And to hear the pro- "fessor of philosophy at Pisa laboring before the Grand Duke with logical argu- "ments, as if with magical incantations to charm the new planets out of the sky.' "The antagonism to Galileo and his hated telescope became stronger. The clergy "began to denounce him and his methods. Father Caccini became known as a

"punster by preaching a sermon from the text, 'Ye men of Galilee, why stand ye "gazing up into heaven?'"

Upon the whole, Dr. Cajori has produced a book that was needed, and as a handy manual of reference for the main historical facts of physics it will discharge a distinct service in our academic and high-school libraries as well as in the hands of individual students who have not access to foreign literature. *μκρκ.*

TRAITÉ ÉLÉMENTAIRE DE MÉCANIQUE CHIMIQUE FONDEÉ SUR LA THERMODYNAMIQUE. By *P. Duhem*, Professeur de physique théorique a l'université de Bordeaux. Tome IV. Les Mélanges doubles. Statique chimique générale des systèmes hétérogènes. Paris: A. Hermann. 1899. Pages, 381.

Duhem's *Treatise on Physical Chemistry* is well known to the readers of *The Monist* through three previous reviews, and the reputation of the work is such that but brief reference is necessary to the contents of the present fourth and last volume. It is divided into two books treating of double mixtures and the general chemical statics of heterogeneous systems. In the first of these books the theory of distillation, the critical stages of mixtures, the liquefaction of gaseous mixtures, etc., are treated; in the second book the general principles of the chemical statics of heterogeneous systems under constant pressure, the general theorems relating to univariance and bivariance, and the general principles of the statical chemics of heterogeneous systems at constant volume, are given. The work contains an index of authors and of the chemical substances studied in the four volumes constituting it, and a glance at this index will show the scope and completeness of this first systematic work on mathematical chemistry.

LEÇONS NOUVELLES SUR LES APPLICATIONS GÉOMÉTRIQUES DU CALCUL DIFFÉRENTIEL. By *W. de Tannenberg*, Professeur a la Faculté des Sciences de l'Université de Bordeaux. Paris: A. Hermann. 1899. Pages, 192.

The present volume is another indication of the activity prevailing at the University of Bordeaux in the department of science. The book is not a large one, but it expounds the chief methods of applying the Differential Calculus to geometry, from clear and partly novel points of view. It is divided into five parts, treating of the descriptive properties of lines, the descriptive properties of surfaces, the metrical properties of lines, the metrical properties of ruled surfaces, and the metrical properties of curved surfaces, respectively. The typography of the book is pleasing, and in the same style as the other mathematical books of Hermann.

DE L'INFLUENCE DE LA PRESSION SUR LES ACTIONS CHIMIQUES. By *Georges Aime* (1837). Avec une introduction par P. Duhem. Paris: A. Hermann. 1899. Pages, 32.

The above title is that of a thesis for the doctorate, written in 1837 by Georges Aimé, of Metz. It has been deemed worthy of reprinting by the Scientific Society

of Bordeaux, and has been supplied with an introduction by Professor Duhem, who regards it as an extremely important document in the history of science, in that it shows for the first time that the "tension of dissociation" has the same value in an inert gas as in a vacuum, and is thus a justification of the postulate upon which the theory of Gibbs rests. Sainte-Claire Deville, who was the first to have promulgated the "theory of tension of dissociation" (1863), was ignorant of the results of Aimé.

LEÇONS DE CHIMIE PHYSIQUE PROFESSÉES A L'UNIVERSITÉ DE BERLIN. By *J. H. Van't Hoff*. Traduit de l'Allemand par *M. Corvisy*, Professeur agrégé au Lycée de Saint-Omer. Deuxième partie. La statique chimique. Paris: A. Hermann. 1899. Pages, 162.

"Chemical Statics" is the subject of the second part of Van't Hoff's work on physical chemistry. It is made up of lectures delivered in Berlin during the academic year of 1897 to 1898, and forms the second installment of a large, comprehensive work on physical chemistry. But it may be considered as an independent work, treating of the methods to which we owe the knowledge we now possess regarding the size, structure and grouping of molecules, and from which has sprung the modern scientific conception of the constitution of matter. The theory of solutions and stereo-chemistry have received adequate consideration. The present second part of Van't Hoff's work has not yet been translated into English, and M. Corvisy's French translation may in the meantime be of considerable service to readers not acquainted with German.

INSTINCT AND REASON. An Essay Concerning the Relation of Instinct to Reason, with some Special Study of the Nature of Religion. By *Henry Rutgers Marshall, M. A.* New York: The Macmillan Co. 1898. Pages, xiii, 574. Price, $3.50.

The main subject of the present work is the study of religion. The study of instinct and reason forms merely a condition precedent to a comprehension of the religious problem proper. "It has long seemed to me evident," says the author, "that activities which are so universal in man as are those which express our religious life, cannot fail to be of significance in relation to our biological development, especially as these activities have persisted for so many ages in the human race. I have, therefore, attempted to outline a theory which will account for the existence of religious activities, and which will explain their biological import."

It will be unnecessary for us to follow Mr. Marshall into the intricacies of the psychological development upon which he has based his theory, except to say that instinct appears to him "as a mode of that simplest of all phenomena of activity—the reaction of a living cell to the stimulus from its environment." Instinct con-

stitutes the typical organic process; reason and choice constitute the variant process in organic life. Instinct and reason "are but aspects of the basic tendency to "the persistence of life; they appear in opposition because we look only at com- "plex organic forms, while the tendency to strive for persistence of life is funda- "mentally *elemental*, only secondarily relating to more or less integrated aggre- "gates of elements, with which, in more or less complex organic form, biology has "to deal."

As to the formulation of the rule of conduct, which is in harmony with the psychological considerations advanced, it is maintained that "the important con- "sideration in the guidance of our lives is attention to, and the strengthening of, "the more far-reaching and pervasive and persistent, although often less emphatic, "impulses within us; and that this is necessary if we are to become efficient indi- "viduals in the racial group to which we belong, and which we hope will persist "and develop in the future." The method of ensuring our conduct under this rule is "by the restraint of those instincts which are wont to be stimulated to vigor- "ous and immediate reaction, by the restraint of the variations which are deter- "mined by rationalistic emphasis, until such time as those more pervasive instincts "that are not wont to be stimulated to vigorous and immediate reaction have time "to assert themselves and to gain due prominence in the determination of our ac- "tion. . . . So soon as this habit of restraint in this manner becomes instinctive, "then, as we have argued above, we find ourselves governed by the religious in- "stinct within us, then we find our trends of action determined not only by the "simple conscience which balances particular impulses, but by that wider develop- "ment of conscience which teaches us to emphasise habitually the most permanent "order of impulse-efficiencies of which we can conceive; then, in other words, we "find ourselves guided by the 'sense of duty.'" Accordingly, the rule of action which best satisfies conscience and produces the closest correspondence between our actions as viewed in retrospect, and our most permanently efficient impulse-series, is formulated as follows: "Act to restrain the impulses which demand immediate reaction, in order that the impulse order determined by the existence of impulses of less strength, but of wider significance, may have full weight in the guidance of your life." "In other words"—and this sentence, heavily capitalised, concludes the work—"BE RELIGIOUS."

THE GROUNDWORK OF SCIENCE. A Study of Epistemology. By *St. George Mivart*. M. D., Ph. D., F. R. S. New York: G. P. Putnam's Sons. London: Bliss, Sands & Co. 1898. Pages, xvii, 328. Price, $1.75.

The announcement of a book on the groundwork of science by a natural inquirer of the standing of St. George Mivart, is well calculated to arouse the expectancy of students of epistemology; but it can scarcely be said that the hopes which would naturally be associated with such a publication have been realised. Instead of an investigation of the principles and methods which form the real difficulties of

the subject, we are confronted with little more than a bare recital of the banal theories of the traditional philosophical moralising. It is remarked, for example, as a result of one special inquiry, that the groundwork of science must be sought in the human mind (as if any one could imagine it to be elsewhere), and that the objects of science are threefold: mental, physical, and metaphysical. The work abounds with like trivial conclusions and commonplaces. In the chapter on the methods of science the assumptions implied in scientific research are said to be as follows: (1) That certain knowledge is possible; (2) that an external objective world exists; (3) that we can know not only our actions, sensations, etc., but also our substantial and continuous personal existence; (4) that if certain premisses be true, whatever follows from them logically must be also true; (5) since we know certain truths indirectly by inference we must also know some things indirectly, and see that they are self-evident; (6) that nothing can at the same time both be and not be; (7) that some axioms are self-evident; (8) that every change must be due to some cause; (9) that nature is uniform; and (10) that some things are necessary, others are contingent. To the person who has given the least thought to that department of philosophy which is called the theory of knowledge, it must appear that it is precisely these so-called assumptions that require elucidation, and that it is nothing less than the object of epistemology to elucidate them. The thinking world is pretty clear as to the implications of the scientific method generally, and it is rather as to the justification and establishment of these implications that they are seeking light. The same remark applies to the crowning conclusions of Dr. Mivart's researches, viz., that the "groundwork of science" will be found to consist of three divisions: the laborers who work, the tools they must employ, and that which constitutes the field of their labor. There is scarcely any one who will deny the truth of this statement, and it would hardly seem that a work of over three hundred pages should be required to demonstrate it.

We should be far from saying that Dr. Mivart has not written a readable book and that there are not many valuable pages of descriptive matter and of general considerations touching the external mechanism of scientific method. All these things it is well to have, and their worth is enhanced by the fact that they come from a scientist who is a professing Roman Catholic, and that we may here see to what length it is permissible to carry the conclusions of reason within the fold of the Roman Church.

The titles of the main chapters of the book are: An Enumeration of the Sciences, The Objects of Science, The Methods of Science, The Physical Antecedents of Science, The Psychical Antecedents of Science, Language and Science, Intellectual Antecedents of Science, Causes of Scientific Knowledge, and The Nature of the Groundwork of Science.

It remains for us merely to quote the concluding remarks of the author: "We "feel bound to confess that the more we study nature, the more profoundly con- "vinced do we become that the action of an all-pervading but unimaginable intel-

"ligence alone affords us any satisfactory conception of the universe, as a whole, "or of any single portion of the cosmos which may be selected for exclusive study.

"Unless we are profoundly mistaken, it is only through the conception of such "an energy, as an active causative principle, underlying and pervading the mate- "rial cosmos, together with the recognition of the dignity of human reason, em- "powered as it is to perceive self-evident, universal, and objective truths, that we "can understand the groundwork of science and attain to a final and satisfactory "Epistemology." μκρκ.

L'Esiglio di S. Agootino. Note sulle contraddizioni di un Sistema di Filosofia per Decreto. By *Lorenzo Michelangelo Billia*. Turin: Fratelli Bocca. 1899. Octavo, pages, xi+148. Price, L. 3.

This book was occasioned by Professor De Craene's volume on *De la spiritualité de l'âme*. It is a metaphysical discussion of various questions relating to the philosophy of the Thomist school and of materialism. While not polemical, the book defends philosophic idealism. The supreme thought of the author is the Christian philosophy. The more philosophy becomes Christian, he says, the more it is philosophy, and Christianity is more philosophic the more it is sincere and entire. The author deprecates the present condition of the school in regard to the teaching of religion. Those who would take God from the school, he declares, are enemies of the human race. Religion is not a complement of education, a part of it, like other branches of learning, it is education itself. There is no true education that is not religious. Such is the conclusion of the author after a series of metaphysical discussions which take the reader back among the scholastics and leave him there.

The Dynamics of Mind. By *Rajkumar Banerji, M. A.* Part the First. Calcutta: Mitter Brothers. Bhowanipur. 1899. Pages, 46. Price, 1s. 6d.

Rajkumar Banerji, an Indian savant, publishes in the Indian Philosophical Series, No. 1, which is just out, a thoughtful monograph on *The Dynamics of the Mind*. It is based on the proposition that "mind is motion," and tries to explain mental activity from the laws of motion. It cleverly introduces modern theories of elasticity, postulates a thought-field analogous to the magnetic field, and also speaks of thought-induction, the transmission of thought-waves, convertibility of thought-waves, etc., etc. Sir William Crooke's ideas and also Thomson and Tait's theories are utilised in the interest of a mechanical explanation of thought transference.

As to the value of these speculations, we have to say that they are more ingenious than verifiable. They collide with the main facts as to the nature of the soul, which does not consist of motion but is the significance of a certain form of motion. The nature of mind does not consist in thought waves which can be treated like electric waves, but in the representativeness of certain feelings. Thus, it is obvious that the treatise of Rajkumar Banerji is based on premisses, which, accord-

ing to our views, are radically erroneous; but for all that we cannot help being interested in the author's attempts, which are cleverly made, and indicate not only a versatility of mind but also a pretty thorough acquaintance with mechanical and electrical science.

ENGLISH POLITICAL PHILOSOPHY FROM HOBBES TO MAINE. By *William Graham*, M. A., Professor of Jurisprudence and Political Economy at Queen's College, Belfast. London: Edward Arnold. 1899. Pages, xxx, 415. Price, 12s.

The design of Professor Graham's work, which immediately engages one's attention by the erudition which it displays and the clearness of its expositions, is twofold: (1) that of giving a connected account of the political theories of the greater English political thinkers that have most influenced practice from the days of Hobbes, and (2) to disengage by the use of criticism the permanent elements of political theory from the erroneous doctrines which have been virtually eliminated by history. His method is that of a combination of the old deductive and the new historical methods. The political thinkers whose systems he expounds are Hobbes, Locke, Burke, Bentham, John Stuart Mill, and Maine. While the book is addressed to ordinary students of political philosophy, it will be especially appreciated, the author believes, by serious students of maturer years who are acquainted with his work on *Socialism*.

ETHICS AND REVELATION. By *Henry S. Nash*, Professor in the Episcopal Theological School at Cambridge. New York: The Macmillan Company. 1899. Pages, vi, 277. Price, $1.50.

The present volume is a collection of lectures delivered by Professor Nash in Philadelphia, under the auspices of the Church of Holy Trinity, the officers of which are the trustees of the John Bohlen Lectureship,—a lectureship modelled upon the Bampton Lectureship of Oxford, England. The object of the lectureship is the apology of the Christian religion, and the aim of the lectures of Professor Nash has been "to show that the Bible marks out the road along which conscience must travel, if it would treat our life on earth with abiding seriousness." Professor Nash adopts the view that the higher criticism, despite the many sins it has to answer for, has placed the question of biblical religion, and the dogmatic theories with which it has been historically connected, upon an entirely new footing. But the views of Professor Nash on the main problems of Christian dogmatics will be found to be quite orthodox.

CLEMENS ALEXANDRINUS UND DAS NEUE TESTAMENT. Eine Untersuchung. By *Hermann Kutter*. Giessen: J. Ricker'sche Buchhandlung. 1897. Pages, iv, 152.

The common opinion concerning Clement of Alexandria is that he does not distinguish between the canonical and Apocryphal writings of the New Testament,

and that therefore as late as in his age the Christian canon was not yet established. Our author, the Rev. Hermann Kutter, proposes to re-establish the old view that the canon was established at that time, because Clement, after all, distinguishes between reliable Christian writings and those which he uses only to refute heretical doctrines. Our author grants that Clement did not as yet know a canon in the sense in which the term is at present accepted, but he shows a discrimination as to the value of his sources, and relies on them as an authority only if they belong to what he calls "the Lord's writings" (*γραφαὶ κυριακαί*).

It is difficult to say whether the defence of the old position is better or worse than the view of the critics so called, for the Rev. Mr. Kutter takes pains to explain the carelessness of Clement, his lack of criticism, and his confusion (*Zerfahrenheit*). Clement in quoting passages, is in the habit of "volatilising their sense whenever it suits him" (*wenn es ihm gerade passt*). Under these circumstances, the Rev. Mr. Kutter argues, judging from the character of his writings, Clement may have expressed himself without precision and yet have adhered to a definite ideal of true Christianity. He quoted "the gospel of the Egyptians" only through the imputation of heretics, and had probably not read it himself. This is quite probable, but we may just as well say that a definite conception of Christianity became established and thus paved the way for a final settlement of the canon.

One of the chief merits of Clement, according to Mr. Kutter, is that to him the revelation was closed. The Old and the New Testament had found their perfection in the past, and he recognises the difference between his own time and the Apostolic age.

Thus, while he relies on tradition, and does not mean to separate tradition from Scripture, God's salvation is to him a fact which has been completed in the past. κρς.

DIE MODERNE PHYSIOLOGISCHE PSYCHOLOGIE IN DEUTSCHLAND. Eine historisch-kritische Untersuchung mit besonderer Berücksichtigung des Problems der Aufmerksamkeit. Von *W. Heinrich*. Zweite Ausgabe. Zürich: E. Speidel. 1899. Pages, vii, 249. Price, M. 4.

ZUR PRINZIPIENFRAGE DER PSYCHOLOGIE. Von *W. Heinrich*. Zürich: E. Speidel. 1899. Pages, 74. Price, M. 2.

Professor W. Heinrich, of the Physical Institute of Krakau, passes in review in the first of these pamphlets a number of psychological authors who have been or are still before the public, and whose views form the subject-matter of psychology to-day; such men as Fechner, Helmholtz, G. E. Müller, Wundt, Lange, Külpe, Münsterberg, Ziehen, Avenarius, and Exner. We are sorry not to find among them Prof. Ernst Mach, whose views deserve to be mentioned as much as those of any one of the above, and since Mach is a physicist like the author he should have been mentioned by Professor Heinrich. It goes without saying that being exclu-

sively under the influence of German philosophy, English and American psychologists are entirely neglected.

Professor Heinrich is critical and thoughtful, and his views upon the whole are sound. He takes the monistic standpoint and adopts the parallelism of psychic and physiological processes. In his second pamphlet, where he proposes to discuss the question of principle in psychology, he is most explicit in rejecting dualism in any form that might be understood as a causation in contradiction to physical causation. He says on page 17: "We cannot escape the conclusion of a perfect interdependence of the psychical and the physical which is not disturbed by the fact that on both sides of our synthesis heterogeneous elements appear whose elements offer qualitatively different results."

The world may not know that Krakau has a physical institute, and we are glad to receive a symptom of intellectual life so full of promise from these quarters of Europe, which have so far not as yet been mentioned in the history of psychology.

κρς.

BRAIN IN RELATION TO MIND. By *J. Sanderson Christison, M. D.* Chicago. 1899. Pages, 143. Price, $1. 25.

Dr. Christison, who served as an expert in several sensational law suits before the bar of Chicago, and may be remembered by our readers as the author of *Crime and Criminals*, which was reviewed in our columns at the time of its appearance, has prepared a synopsis of the physiology of the brain in its relation to mind which is very readable and instructive to the general public. It contains an interesting collection of analyses of cases which would go far to prove that mind should not be identified with brain-action; but we have to emphasise that Dr. Christison goes a little too far in his theory of the independence of mind. He should consider that in all the cases of loss of brain-substance, one of the hemispheres only was injured. As to the brainless dog of Professor Goltz, we have to say that this famous creature did *not* "exhibit defects only in the manifestation of intelligence, memory, reflexion, and understanding," but he was a perfect idiot of a dog and showed no signs of intelligence; he was, as Professor Goltz expressed it himself, a living and eating reflex mechanism; he was a living animal, performing all the functions of animal life without any intelligence whatever. Professor Goltz's own statements are perhaps misleading and in addition it must be granted that in the course of further life he developed memory again, but even that was insignificant, and the dog continued to give the impression of a soul-dumb animal. As the reviewer has himself seen the dog, shown by Professor Goltz, he could form his own opinion on this point.

While Dr. Christison seems to believe that soul-activity is possible without the corresponding brain-commotion, we would say that much intelligence is left even after the removal of great quantities of brain-substance, if only some parts of the brain-substance able to perform the work are left. Nature apparently has been

very generous in furnishing man with a good supply of brain-matter; and in fact brain-diseases and nervous diseases are comparatively more rare than might be anticipated. Nervous tissues are very tenacious and more reliable in their work than other organs; but there is no argument in favor of the theory that in the absence of all brain-matter the mind would be able to continue its work. If Dr. Christison modified his views to say that the methods of many modern criminologists are based upon a wrong materialism, that the shape of the head and other bodily symptoms are worthless in a consideration of a man's character and moral qualities, we would heartily agree with him.

In spite of the shortcomings of the book, it is very readable and can be heartily recommended. P. C.

SAGGI SULLA TEORIA DELLA CONOSCENZA. Saggio primo sui limiti e l'oggetto della conoscenza a priori. By *Cosmo Guastella*. Palermo: Remo Sandron. 1898. 12 mo. Pages, 570.

The nature of this book may best be indicated by its contents. They are as follows: Hypotheses in regard to concepts, classification of judgments, judgments a priori and judgments a posteriori, analytical doctrine of judgments a priori, doctrine of Kant on synthetic judgments a priori, an examination of mathematical and other less important classes of propositions a priori, doctrine of the empirical philosophers on necessary truth, psychological foundation of necessity and the a priori character of judgments on resemblance, and finally the inconceivability of the negative and the universal postulate. The author strives to follow closely the scientific method and in this volume, which is to be followed by others, he arrives at the conclusion that all affirmations in regard to an existence beyond phenomena are insupportable. Such an existence, he says, could not be proven by experience which is itself limited to phenomena; nor could it be arrived at intuitively or deduced a priori, because, in reality, existence could not be the object of knowledge a priori. Such a conclusion is not fatal to the lofty aspirations to our intelligence for, he says, there is no reason why we should pass beyond the knowable. The knowledge which we may attain to, he asserts, is complete and absolute. "In phenomena which are the only *things* of which we may affirm the existence there is nothing to know other than the regular order with which they present themselves, their constant sequence—and this is the only *causality* which we have the right to admit; now we may know these sequences and this order; human knowledge is therefore, virtually unlimited."

LA DOTTRINA DELL 'INTELLETTO IN ARISTOTLE e nei suoi piu illustri interpreti. Opera premiata dalla R. Accademia dei Lincei. By *Romualdo Bobba*. Turin: Carlo Clausen. Pages, 479.

The book is divided into two parts. The first takes up the doctrine of the νοῦς ποιητικὸς and παθητικὸς as a result of the writings of Aristotle, the logical

genesis of this theory in the mind of Aristotle with the historical reasons and the subjective impulses which explain his oscillations and contradictions and the relations which unite the doctrine of the νοῦς with the other parts of the Aristotelian philosophy and the determination of its meaning and value. In the second part the author gives us an interpretation of the νοῦς ποιητικὸς and παθητικὸς of the immediate disciples of Aristotle and of his Greek commentators. Chapters are devoted also to the Arab and scholastic commentators of Aristotle and to the principal Italian commentators of the Renaissance. The principal historians and commentators of the past century and of the present century down to our day also receive some attention. The concluding part of the volume takes up the excellences and defects of the investigations of Aristotle in relation to his psychological and general doctrine and to contemporaneous philosophy. The author in treating the much debated problem of knowledge claims to have added a valuable contribution to the history of philosophy by showing those parts of the Aristotelian doctrine which ought to be preserved and perfected and those which should be eliminated.

GIAMBATTISTA VICO E I SUOI CRITICI CATTOLCI. Con osservazioni comparative su gli studi religiosi dei secoli xviii e xix. Ricerca storica. By *Baldassare Labanca*, Professore della Università di Roma. Naples: Luigi Pierro, Tip. editore. 1898. Pages, vii+453.

In one of Vico's letters he refers to certain Catholic critics by whom, under the guise of religion, he was harrassed, and who sought to ruin him and all others who discovered new truths. This letter furnished the author of the present work a hint which he has carefully followed up in a study of the various critics of the famous Italian thinker. The starting-point of our author's investigations was an old book which he accidentally came across in Rome entitled "An Apology of the Human Race on Being Accused of Having Been at one Time a Beast." This book, after some investigation made necessary by its incomplete condition, is assigned to Finetti who wrote in 1764. This apology, says the author, was the occasion of the present work. He finds in it many anticipations of modern criticism of the *Scienza nuova*. Among the critics of Vico, to whom attention is given, besides Finetti, are: Romano, Lani and Duni. The metaphysics of Vico and his religious doctrines, both in relation to those of our present time and as they appeared to some independent critics, are considered at some length. One chapter is devoted to a glance at other religious doctrines of the Italians in the eighteenth century. The author has performed a scholarly piece of work and gives us a book which is indispensable to a thorough study of Vico.

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THE MONIST

THE TWO ACCOUNTS OF HAGAR.

(Genesis xvi. and xxi., 8–21.)

SPECIMEN OF AN HISTORICO-THEOLOGICAL INTERPRETATION OF GENESIS.[1]

OF all the books of the Old Testament probably Genesis interests both theologian and layman most. And indeed, for certain phases of our general theological and religious attitude it is of the greatest importance how we regard the individual narratives of Genesis, stories that have been dear to us from earliest youth up. Moreover, Old Testament theology has devoted a great, indeed an immense, amount of learning and intellect to the interpretation of Genesis. In the present century Old Testament science has been occupied especially with tracing up the sources from which by general consent Genesis is composed; and though the combination of the sources of this book is far too complicated ever to warrant the expectation of a final and complete solution of all the problems involved, yet the result has been such that we of the present day may point to it with grateful pride in our predecessors in science. Especial respect and gratitude is due to the Old Testament specialist Wellhausen, who taught us how to judge correctly the relative age and the character of the sources.

[1] Translated from the author's MS. by W. H. Carruth, of the University of Kansas.

And yet, if we consider the commentaries on Genesis, and ask them what, after all, has been the outcome for the real purpose of all work upon Genesis, to wit, the living, historico-theological understanding of these narratives, we cannot give a really satisfactory answer, despite the best of will toward what has been thus far accomplished: while dealing with all the preliminary questions the really vital matter has been neglected, the chief emphasis of investigation has been laid upon literary criticism and the combination of the sources. And this has been the case not only with Genesis but to a large extent with the rest of the Old Testament, and not with the Old Testament alone, but also frequently with the New Testament. Now, all literary criticism is in the nature of preliminary,—a truth that should never have been allowed to grow dim. Ultimately the important thing is not to know by whom and when a book was written, and what its sources were, but the real question for scholarship should ever be: How is this book to be understood? And it is very plain that theological exegesis has fallen short in this respect. Exegesis is considered tedious, and often, indeed, with justice. Why? Because it is occupied too exclusively with preliminary questions, with matters of text criticism, grammar, archæology, and lexicography, with introductory discussions, and, especially in the case of the New Testament, with the logical connexion. All this is well and good provided it remains merely preliminary and keeps within proper limits. But it is not the vital matter; the vital matter is to get a living conception of the living writer who here speaks to us, to come near to him in spirit, to put ourselves in his place when he rejoices and when he grieves, when he pines and sighs, and when he exults in his hymn of thanksgiving. The living understanding of the book, that is true exegesis.—It may be said in reply that we should not blame the past too much for spending so much time over preliminary matters and failing so largely to reach the matter of prime importance, since these very preliminaries had to be disposed of in advance. I am quite willing to accept this explanation, and only ask consent to my proposition that it is now time to begin energetically with real exegesis. Now what appears to be the object of

such exegesis in Genesis? This I propose to show by an example in what follows.[1]

HAGAR'S FLIGHT; GENESIS XVI.

1. *Sarah, Abraham's wife, bare him no children; and she had an handmaid, an Egyptian, whose name was Hagar.*—The narrative makes an entirely new start, assuming only one thing, that there is a man by the name of Abraham; everything else is told in the story. We infer from this that the narrative once existed independently. In oral tradition every story is told as complete in itself; the connexion in which we find the stories at present was supplied afterwards. —The slave, Hagar, is the property of Sarah, not of Abraham. According to Israelitish custom parents could give to a young wife a slave as dowry, who was thus her personal property, and not, like the other maid-servants, at the disposal of her husband. The slave is a foreigner, which was probably a very common thing in an Israelitish family. In this particular case she was an Egyptian and named Hagar. These items ought to mean something, just what, we are to learn in the following.

2. *Now Sarah said unto Abraham: Thou knowest that Jahweh has denied me children; go in unto my handmaid; it may be that I shall obtain a son by her.*—The great mysteries of generation, conception and birth are derived in all antiquity from the divinity, in polytheistic religions usually from a goddess. In Israel this, along with many other matters, had been transferred to Jahweh who thus receives many and sometimes quite varied predicates.—An old Israelitish legal custom is here referred to, according to which the wife, if barren, may offer another woman as substitute and adopt the latter's children. Of course, it costs Sarai some struggle to sur-

[1] For further exposition of these stories the reader is referred to my *Commentary on Genesis*, soon to appear from the press of Ruprecht and Vandenhoeck in Göttingen. The author would like to say at the same time that this Commentary which is intended primarily for the Old Testament scholar and the student of theology, will appeal also to the interest of the lay reader who is familiar with history. It is hoped that friends of the Bible who get hold of this Commentary will recognise the devoted love with which the author has labored for many years upon Genesis.

render to her husband the slave who is her personal property, but she conquers herself in the hope of thus obtaining children. Childlessness is a misfortune and a disgrace, while motherhood brings honor and dominion in the house. The wish of the slave is not consulted in the surrender; it is a great honor for her to have intercourse with her master.

4. *And Abraham obeyed Sarah, and he went in unto Hagar, and she conceived. But when she saw that she was with child, she despised her mistress.* The slave woman, shown too much honor, grows arrogant. And the narrator makes plain that he strongly disapproves of such action on the part of the slave, emphasising the words: she despised her mistress. This must never be, for the slave must honor his master.

5. *And Sarah said unto Abraham: The wrong that I suffer be upon thee! I myself gave my handmaid into thine arms, and now that she sees that she is with child, she despises me. Jahweh judge between me and thee.* Sarah is indignant, so indignant that she even invokes the righteous judgment of Jahweh against her husband, for she feels that she has deserved reward and not insult from Abraham.

6. *Then said Abraham to Sarah: Behold, thy maid is in thy hand; do to her whatever seemeth to thee well. So Sarah dealt hardly with her; but she fled from before her.* Abraham, always tractable, renounces his claim to his concubine for the sake of peace in the family. The phrase "she is in thy hand" indicates a legal act, a cession; accordingly Hagar is now once more Sarah's slave. Before this Sarah could not help enduring contempt; now she turns the tables and shows Hagar who is mistress. What she did to her, as well as what Hagar had done before to offend her mistress, the narrator fails to tell; primitive narrative is very sparing of such details. It is not to be supposed that she treated her gently, for an Israelitish slave was used to sound drubbings.—The few touches make the three personages perfectly clear: Abraham is tractable and yields to his wife; at her request he takes Hagar as a concubine, and again at her bidding he dismisses her. Sarah is the impulsive woman, proudly conscious of her position as wife, in passion cruel and very subjective: in order to obtain children she gave

away Hagar, and yet she regards this very act as deserving of recognition from her husband. And so, in her passionate indignation at the injustice done her, she sets herself up as unselfish before Abraham,—which is psychologically very true to nature. The Israelitish husband probably sighs in secret over his irritable wife. Finally the slave, whose fluctuant fortunes entertain and move the hearer; first a slave, then her master's concubine and mother of the heir, and as such impudent toward her childless mistress; then severely abused and offended in her maternal pride. These three: husband, wife, and maid, are clearly Israelitish types; that they act just as they do, seems to the naïve legend quite a matter of course, for this is the fashion of Israel.

From this point on, Hagar is the leading character. "But she fled from before her." In the construction of the narrative this sentence is the climax of all that has preceded (the object of which is to explain this flight), and the preliminary for all that is to follow. What are we to regard as the motive of Hagar's flight? The narrator informs us that Hagar was with child, and that she dared to flee into the wilderness, the wilderness where deprivations, violence and murder threatened her. It was, then, an act of desperation and of defiance: better all the dangers of the wilderness than the insults in the tent of Sarah! Thus we have a complete picture of Hagar: when it was well with her she treated her mistress with insolence, when she is humbled she runs away in defiance. At the same time we are not to lose all sympathy with the unruly Hagar; for afterwards the legend tells us that the divinity himself took care of her. The judgment of the god is of course the judgment of the narrator himself, who takes pleasure in the unbending will of the stubborn woman.

7. *Then she met an angel of Jahweh*[1] *by the fountain in the wilderness* (*by the fountain in the way to Shur*). In connecting the story we have to consider that Hagar has come to the fountain to drink; just as any travellers and Bedouins come to the fountain. It seems

[1] Thus we should read.

that Hagar is acquainted with the desert. "The fountain" is a definite fountain, the location and name of which are given at the close of the story. The phrase "by the fountain in the way to Shur" anticipates this description, and is a proper addition as far as situation goes. The fountain is on the road from Canaan to Egypt, which suits the circumstances perfectly: the fugitive Hagar is fleeing to her old home in Egypt. The old narratives always fit closely into the surroundings in which they take place; they do not originate in the study, are not learned accounts, but popular tales, told in the very places of which they treat. There Hagar meets the divinity, who bears the name of "Jahweh's angel."

Now we are struck by the fact that Hagar afterwards believes that she has seen Jahweh himself: "And she called the name of the Jahweh that spake unto her *El roi*" אֵל רֳאִי. This strange confusion of Jahweh with the angel of Jahweh is not rare elsewhere in the old narratives, and has been the occasion of curious conjectures and still more curious attempts at explanation on the part of modern investigators. In all cases where the given statement of facts in an otherwise reasonable tradition seems to be absurd the explanation is to be found in the existence of a history in which a peculiar distortion has made apparent nonsense out of what was originally intelligible and simple. Older versions introduced Jahweh himself in such cases; later editors and copyists were offended by the notion of Jahweh's being thus too intimately involved with the world, and preferred in these passages to speak of the angel of Jahweh, that is, an inferior divine being. But this modification is not carried out consistently; in some places Jahweh's name remains. And thus has come about the apparent absurdity that an angel of Jahweh appears, but that Hagar declares that she saw Jahweh. This substitution for the god of an inferior divine being is a process which we may find frequently in the history of religion elsewhere.—But we can go a step further. Later Ishmael receives his name from the fact that *God heareth;* but this name is not Shemaja, "Jahweh heareth," but Ishmael, "El heareth." From this we conjecture that the oldest version of the story did not contain the name of Jahweh at all, but spoke of an "El," that is, god. The

correctness of this inference is shown by the word of Hagar: she called the name of the Jahweh that spake unto her, "El roi."

So "El roi" was doubtless the original name of the god of this narrative. Accordingly we perceive in the legend three stages of religious development. Originally the god was "él roi" אל ראי, then Jahweh was introduced and "él roi" became an epithet of Jahweh in this place; finally the angel of Jahweh took the place of Jahweh.

Furthermore we are able to say something about the nature of this "él roi" אל ראי. This god appears at the fountain, he is a fountain-deity, and indeed the deity of a certain fountain, the fountain "lahai roi" בְּאֵר לַחַי רֹאִי. It is not a matter of accident that the name of the divinity, "él roi," and that of his fountain, "beer lahai roi" באר לחי ראי, are found together; this god is the deity of this fountain. And so we thus obtain a glance into an ancient religion, in which exists a belief in local deities, specifically in fountain deities. What we know of the pre-Israelitish religion of Canaan agrees entirely with these inferences. The pre-Israelitish religion of Canaan worshipped a great number of such local deities, the "bealim" and in Canaan, as well as in other lands, fountains were frequently held sacred; in the earliest times people saw a reflexion of the divinity in the living, ever-gushing, life-giving water. When Israel occupied Canaan it adopted also a portion of the Canaanitish deities, religious ceremonies and legends, and to some extent identified these deities with its own Jahweh. And thus here the god of the fountain, *él roi* is regarded as equivalent to Jahweh.

In the same way the epithet of Jahweh at Bethel is *él Bethel*, at Beersheba, *él olam*, at Jerusalem, *él eljon*; all of these names were originally the names of the local deities of these places, and were only transferred later by Israel to Jahweh.

But now it is very important to note that the relation between the fountain and the god, which must have been very close once, has become very loose in the present form of the story; the god is no longer represented as coming forth from the fountain or vanishing in it. This feature is common in the legends of Genesis: the god and the place of his worship are always rather loosely connected. Israel identified Jahweh with the local deities to a certain

extent, but did not think of Jahweh as so closely connected with the locality. So the history of the Hagar stories is a small section of the great process of the adoption by Israel of Canaanitish worship.

The god appeared to Hagar at the fountain and spoke with her. Such appearances and conversations on the part of the god are nothing rare in ancient legends. And incidentally it is very common for the god to appear unrecognised. It is characteristic of divinity that it works in secret; it is too awful to appear openly; man would needs die with terror if he recognised its true nature. Accordingly the legends like to tell how the god lifts the veil gently and gradually until the human being has recognised him; but at the moment when this occurs the god vanishes. Thus it is here.

8. *He said: Hagar, Sarah's maid, whence comest thou? whither goest thou? And she said: I must flee from before my mistress Sarah.* It is assumed in this conversation that Hagar did not at first recognise the god; in her eyes he is merely "a man." The man speaks to her, not she to him; that she would not dare to do because he looks so "fearful." But his words are wonderful. She does not know him, but he knows her and calls her by name. Hagar cannot fail to wonder whether this is perhaps a man of God. Then he continues: "Whence comest thou? Whither goest thou?" a question of surprise and also of interest: why are you, a woman, here in the wilderness? But Hagar answers as though through her shut teeth; no whimpering and complaining, but only the fact that she is fleeing.

11. *And the angel of Jahweh said to her: Behold, thou art with child.* Hagar's pregnancy—such is the assumption in this remark—has thus far been a secret; and the man knows even this most intimate secret! Accordingly she is inclined to believe him when he continues: *Thou shalt bear a son*, and then prescribes his name: *And thou shalt call his name Ishmael* ("god heareth"); *for Jahweh hath heard how thou hast been mistreated.* The legends are fond of telling how an oracle is pronounced regarding an unborn child; what the man afterwards became, the divinity prophesied to his mother before his birth: and so his later fortunes are not a matter of chance, but divine destiny. And even his name is not left to the

whim of the parents, but is fixed by the command of God. And God imparted also even the significance of the name. The ancient Hebrew people devoted much attention to the significance of names; almost every old legend contains such interpretations, which are often ingenious and full of meaning.—But the boy is to be called Ishmael because God has heard "thy mistreatment." The original uses the same expression as before in "she dealt hardly with her." God has heard of this mistreatment, heard even now as he hears Hagar speak. But to Hagar these words are a new puzzle; whence does this remarkable man know that God has heard of this mistreatment? And now she even hears from his mouth a prophecy regarding the destiny of her son:

12. *He shall be as a wild ass among men, his hand against every man, and every man's hand against him, and he shall sit upon the nose*[1] *of all his brethren.* These words are intended to comfort Hagar and encourage her to endure all her hardships here, for a reward is in store for her trouble.—The legend details the destiny of Ishmael to become a Bedouin with unmistakable satisfaction. It compares the Bedouin with the animal that shares the desert with him. The wild ass is untamable and fond of freedom; he laughs at cities and the driver; but indeed his food is scanty: a splendid picture of the nomad. And further: Ishmael's life is a constant warfare, and he is every man's foe: a lot enjoyed by men of heroic type, but, on the other hand, full of dangers. "And he sits upon the nose of all his brethren," a situation more agreeable to him than to the brethren whose cattle he robs and whose fields he plunders. This vigorous description of the destiny of Ishmael may serve as a warning to the modern teacher not to get too mild a conception of the tone of the story. For the legend thinks, rather, that this untamable Ishmael is a worthy son of his bold and defiant mother, who also refused to bend her neck under the yoke, but spurned a life of security because it was also a life of humiliation. And such as she is as she stands at this moment before the god, defiant and at odds

[1] This extraordinary phrase is not suggested in any of the variants of the English Revised Version. Yet Professor Gunkel seems not to use it whimsically; he comments upon it later as though it must be taken literally.

with the world, so her son is to become, he also, unruly, freedom-loving and the foe of all the world. Now comes the conclusion. As is customary in old legends, the place, and in this case the god also, receives a name.

13. *She called the name of the Jahweh that spake unto her: Thou art "el roi"; for she said, Verily here have I seen the end* (?)[1] . . . . The explanation of the name has become unclear in the text; from the sense of the connexion we should expect perhaps: "the end of my distress." The narrator of the legend reflects upon the meaning of the name *el roi*, the original and precise meaning of which is scarcely known to him, and interprets it in his own fashion. The name of the fountain also is explained.

14. *Therefore the fountain is called "beer lahai roi"; it lies, as is well known, between Kadesh and Bered.*—The conclusion of the narrative is lacking. We expect to be told further: how Hagar remained by this fountain; how she bore Ishmael there and gave him the name; how Ishmael grew up and became a tribe which had its seat by this fountain and this "él" for its god. Why this conclusion is lacking will be shown hereafter.

THE ORIGINAL MEANING OF THE LEGEND.

The legend deals with Ishmael. This name appears elsewhere in ancient legends and histories as the name of a Bedouin race. Plainly the Ishmael of whom our story tells is according to the legend the ancestor of the race that is said to bear his name. This is made perfectly certain by xxi. 18, according to which the boy Ishmael became a great race. The same thing is true of many personages in Genesis, especially, for instance, of Jacob and Esau, of Judah, Joseph and the other sons of Jacob, of Moab and Ammon, of Shem, Ham and Japhet, and many others. All these in history and in reality are races and tribes; in legend and poetry they are regarded as individuals, ancestors of the races which they personify. We need not raise the question here how extensively this view is to be applied to the personages of Genesis; I am showing here only

[1] The Eng. Revised Version has here no variant at all, but something altogether different: "Have I even here looked after him that seeth me?"

that the legend of Ishmael, if I understand it rightly, requires this interpretation. When this legend describes Ishmael's love of freedom and his quarrelsomeness, it means by this not only that there lived once a man named Ishmael who had this character, but it desires at the same time to characterise thereby the habits of his descendants, the Ishmaelites. When it gives the name of the fountain beside which Ishmael's birth was prophesied, this is no fiction, but that fountain, we must conclude, was the chief seat and sanctuary of the tribe of the Ishmaelites. Likewise when the legend reports the name of the god who appeared to Ishmael's mother, it means that this god, "él roi," is the tribal god of Ishmael.

Finally, the name of the mother, Hagar, is no invention. There must have been a primitive tribe named Hagar, from which the tribe of Ishmael was derived. The mother of Ishmael is a slave; this feature also has its significance. Those who tell one another this story, and who derive their origin from Isaac, the legitimate son, insist that they are nobler and more legitimate than their brother Ishmael. Furthermore, Hagar is an Egyptian, and Ishmael is therefore not pure stock, but only a half-breed. Such mixtures of Bedouin tribes and fugitive Egyptians are proven on historical evidence.[1] Ishmael is the older race, the first-born; this feature also is confirmed by the facts; when Israel came upon the stage of history Ishmael was already forgotten. And thus, if we but understand how to read these ethnographic legends, we can derive from them much information which is sometimes of great historical value. And this information is often the more valuable because these legends reach back into such primitive times, times from which we have no historic reports. Thus, of this race of Ishmael, with its center at Beer lehi roi, באר לחי ראי, we have no other historical information. Moreover, it needs no argument to prove that these legends themselves become much more vivid when we understand their primitive meaning.

[1] Professor H. Winckler at Berlin says that the word מצריה is not related with מצרים Egypt, but with מצר, a name of a Bedouin tribe in the south of Palestine; a hypothesis which I cannot but think very probable. Hagar is according to the old account at home in the wilderness.

Many of the legends of Genesis aim to answer questions, and we fail to understand them if we do not recognise this purpose. Thus the legend we are considering asks the questions: Whence does Ishmael get its name? How does it come to have this location, this reputation, and this god? The need of furnishing answers to these questions led to our legend, or at least gave it its character. That is, our legend treats the origin of the tribe of Ishmael. The chief question is this: How does it come that Ishmael, our elder brother, has become a Bedouin? He is surely Abraham's son, conceived in Abraham's house, and yet a child of the desert, born beside a fountain in the wilderness; how can this be? The legend answers: When his mother had conceived him she became a fugitive, and thus he was born in the wilderness.

Age of the Legend.—Our legend must be very old, since it knows so much of this Ishmael that we can find in no historical account. Moreover, the characters of the personages are quite primitive. We can distinguish in the legends of Genesis two types, an older, in which men are drawn as they are, from life, and a later, which describes religious ideals. Very clearly the present legend belongs to the naïve older type. The conception of divinity is primitive also: the god sides with the defiant Hagar.—A great number of the legends of Genesis are not of Israelitish origin; many were simply adopted and amalgamated by Israel. Such may from the beginning be presumed to be the case with the legend of Ishmael. Just as, for instance, the Kyffhäuser legend[1] has, as a matter of course, its home at Mount Kyffhäuser, so it is natural that the tribal legend of Ishmael should have been told originally in Ishmael, and have had its home at Beer lahai roi. This would be borne out by a number of features, especially the vigorous description of the Bedouin life. Of course, the Ishmaelites must have told the story somewhat differently; they would not have made their ancestor the son of a fugitive slave. In our version we have the story as it was told in accordance with Israelitish tradition.

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[1] According to a familiar German legend Emperor Frederick Barbarossa sits at a marble table within the Kyffhäuser, a mountain in Thuringia.

Style and Preservation of the Legend.—The legend is a remarkable model of the oldest narrative style. The first portion of the story, especially, is distinguished for the variety and truthfulness of its pictures. At the same time the legend is distinguished for strict connectedness of action and especially for its admirable condensation. The narrator achieves wonders in his omission of everything not absolutely essential; with great energy he holds to the main thread of the action. Such admirable art can only be the product of a long artistic tradition; we cannot but assume that it was cultivated in Israel by a class of professional *raconteurs*. Ancient legends usually show their great antiquity by the omission or veiling of some of their elements which had become offensive to later times. Thus it is here. The legend has forgotten that the god was the local god of the fountain, and the fountain really a sanctuary. How and whence the god came, where and when he disappeared, and when Hagar recognised him, all this the legend omits to say. There results a peculiar intellectual chiaroscuro which is characteristic of the ancient legends.

THE EXPULSION OF ISHMAEL, XXI, 8–21.

8. *And Abraham made a great feast on the day that Isaac was weaned.* 9. *And Sarah saw the son of Hagar the Egyptian, which she had borne unto Abraham, playing with her son Isaac.*[1] 10. *Wherefore she said unto Abraham, Cast out this bondwoman and her son; for the son of this bondwoman shall not be heir with my son, even with Isaac.* With clever and natural touches the legend indicates the motives for the expulsion of Ishmael. At the bottom of it was Sarah's jealous love for her son; for maternal love may become most terrible cruelty if any one tries to harm the beloved child. To give us a vivid picture of this the legend takes us to the day of the weaning of Isaac. This is the day on which, after the dangerous years of infancy—for the weaning occurred in about the third year,—the mother rejoices in her darling and regards it with especial tenderness. On this day Sarah happens to notice Ishmael playing with her child. This element of playing, מצחק (*mesaheq*) is derived

[1] Thus the Septuagint.

from the name Isaac יִצְחָק (*jishaq*), for the legends are fond of such ingenious plays on the names of persons and places.—The thoughts of Sarah as she sees the children playing are not given, in accordance with the custom of ancient narrative method; we have to guess them from the context. The mother is thinking—what else should she do on such a day as this?—of the future of her child, and already planning for it—for mother-love has far-seeing eyes. And so when she sees the two children playing together it occurs to her that they will divide the inheritance when they are men. And so she demands of Abraham that he cast out Hagar and his own son. The master has the right to dismiss his slave and expel his children entirely in accordance with his personal whim. It is to be noted that Hagar has in this case a different position in the house from that of the former account. There she was Sarah's property; but here she belongs to Abraham, and is at the same time his concubine; in this account she has nothing whatever to do with Sarah.

The older account went on to tell at this point how Abraham, being tractable, obeyed his wife; with heavy heart, indeed, though not on account of the slave—for slaves are plentiful—but on account of his son whom he is to cast out among strangers. But we may infer that she pursued him with her remarks and worried him so that his breath grew short as with one dying. The oldest account, intimate with human nature, probably regarded this yielding on Abraham's part as quite intelligible; the later version, which wished to see in Abraham a moral ideal, took offence at his casting out his own child. Accordingly a later hand has interpolated here the following: 11. *And the words were very grievous in Abraham's sight, on account of his son.* 12. *But God said unto Abraham: Let it not be grievous in thy sight because of the lad and because of thy bondwoman. Hearken unto Sarah in all that she saith unto thee, for in Isaac only shall thy seed be called.* That is, the descendants of Ishmael shall forget that they are derived from Abraham; so that he nevertheless will become no real son. And the Lord further comforts Abraham as to Ishmael's fate: 13. *But also of the son of the bondwoman will I make a nation, because he is thy seed.* That

these words are not a part of the original narrative is evident for many reasons, especially the following: If the ancient legend had known anything of this command, it would have mentioned it at the beginning of the story and have built up the whole story on this alone (as in the story of the sacrifice of Isaac). For a command from God is for the pious an adequate motive and permits no other subordinate motive. On the other hand, when the ancient legend shows such care to depict the jealousy of Sarah, it does so with the intention of explaining from this and this alone the expulsion of Ishmael. If in accordance with this we omit the command, the story gains in beauty and consistency of form and at the same time in antiquity and force of substance.

Thus far the occurrences in Abraham's tent. The legend now goes on to tell of the fortunes of Hagar and Ishmael. 14. *And Abraham rose up early in the morning, and took bread and a leather bottle of water and gave it to Hagar, and laid the boy on her shoulder,*[1] *and sent her away.* With deep sympathy the legend now tells of Hagar's expulsion and distress. A bottle of water and a loaf is all that she receives for the journey; how will she fare when this little supply is exhausted? Will she find her way in the pathless land? *And she departed and wandered in the wilderness of Beer-sheba.* So Abraham's home is to be thought of as not far from Beer-sheba. 15. *Now when the water in the leather bottle was spent she cast the boy under one of the shrubs,* 16 *and went and sat down over against him, as it were a bow-shot; for she said: let me not look upon the death of the child.* Now mother and child get into the most terrible mortal danger: the way is lost, the water is out; all that is left is to die. The story is evidently nearing its crisis, and on this account becomes unusually detailed: the situation is described closely and an exception is even made to the general rule against reporting thoughts directly. In her despair she cast the boy, whom she had been carrying, under a bush. Naturally the boy is exhausted sooner than his mother; he will die first. But the mother's eye cannot endure the sight of his death anguish; therefore she goes apart some

[1] Thus we are to read.

distance, but not—O loving and inconsistent mother heart!—not too far. Once more the affecting scene is described: *And she sat over against him; and he*[1] *lifted up his voice and wept.* The scene is meant to be impressed deeply upon our hearts. Here sits the mother waiting for the death of her son, and there lies the boy panting and crying for water. At this point we are to suppose a pause.—Then follows the third portion of the story, the turn of fortune, the rescue of Ishmael. 17. *And God heard the voice of the lad.* This statement, which puts an end to all the distress, echoes in the hearts of the listeners: "God heard," he is a God of mercy; God hears even the voice of weeping children; no one is too slight, not even a weeping child, for God to have compassion on him!—The saying is repeated in what follows. The angel exclaims to Sarah: *God hath heard the voice of the lad.* The narrator emphasises this statement thus because he has in it reached the point. He proposes to take up this phrase later in order to explain the name of Ishmael. It must be admitted that the narrator has worked up to this point, which he had all the time in view, in a remarkable manner. This is the supreme art of story telling. *Then the angel of God called to Hagar out of heaven and said unto her.* The Elohist, to whom we owe this beautiful account, speaks here of the angel of God, as in the other account the Jahwist speaks of the angel of Jahweh. Here too it is to be supposed that the original form of the story spoke of God himself, and that the later time substituted "the angel of God" out of religious respect. The same religious consideration explains also why the angel calls "out of heaven"; in the older legends the divinity himself comes upon earth, and appears like a man among men; thus it is in the first version of the Hagar story. But later times took offence at such an anthropomorphic conception of God, and preferred to say that God remained in heaven and talked with the patriarchs from there. In the present case the two views are combined: it is only an angel who speaks, and even he remains in heaven.—But the angel calls to Hagar: *What aileth thee, Hagar? fear not; for God hath heard the*

[1] Thus we are to read with the Septuagint.

voice of the lad where he is. The place where the boy lies is a definite place, a place where God hears, that is, a sacred place. This is a particularly fine touch, which we must not miss: in her supreme distress, when in her despair Hagar threw the lad down, she hit upon a place where God is near and hears; when her need was greatest, God's help was nearest. 18. *Arise, lift up the lad, and hold him firmly in thine hand;* do not give him up, for he is destined to great things; *for I will make him*—an over-exuberant prophecy, especially to the ear of antiquity—*a great nation.* Thus the angel gives Hagar new courage. 19. *And God opened her eyes, and she saw a well of water.* She sees all at once what she had not noticed before, a well. This touch, too, is true to life. A well is a deep hole in the ground, at the bottom of which is the water; such a well may be hidden from the eye by the slightest elevation of the surface, and is often not easily recognisable from a distance. Whether the well was already there, or whether it was called forth on the moment by God's word, we do not learn; the delicate tale draws a discreet veil over this point. In the original form of the story this well was without doubt a sacred well, a well at which God appears, God hears.

And she went and filled the bottle with water, and gave the lad drink. Here is a touching trait: we are not told that Hagar herself drank; that is mother-love.—The story is now finished; we expect further only the conference of names, customary at the close, and some notes as to Ishmael's future fortunes. The giving of names has been omitted by later editors, because the same names were already explained in other stories. But originally there must have appeared here, first, the name of Ishmael; it is evident that the original narrator must have given this from the fact that the name of Ishmael has been avoided in the story up to this point, and only the expression "the lad" employed; and next, the name of the well. According to the context this name was Beer-sheba: Hagar wandered in the wilderness of Beer-sheba. We may presume that the narrator interpreted this name as the well of "the one crying for help," beer sewa בְּאֵר שָׁוַע: this is why he told at the point noted that the lad "cried for help." And now the further fortunes of

Ishmael: 20. *And God was with the lad, and he grew.* The growth of the lad in the midst of the dangers and hardships of the wilderness can only be explained as a miracle of God. *And,* when he became a man, *he dwelt in the wilderness of Paran,* between Canaan and Egypt (or Msr). 21. *And his mother took him a wife out of the land of Egypt.* This was originally a variant of the note that his mother was an Egyptian or a Musrith.

COMPARISON OF THE TWO ACCOUNTS.

The two accounts agree in the situation and in details. The actors are the same: the jealous Sarah, the tractable Abraham, the slave Hagar, who bears a child by Abraham before her mistress has a child. The principal action is also the same in both: first they describe a scene in Abraham's tent in which Sarah, jealous and cruel, urges Abraham and Abraham yields, and, at the close, Hagar's leaving Abraham's tent and going into the wilderness. Thereupon Hagar gets into great distress. Then the divinity intervenes. He reveals himself at the well and is moved by the misery of the fugitive. Thus Ishmael receives his name: "God hears," and the well too is named. Ishmael grows up in the wilderness and becomes a nation. The two accounts answer the same question: how did the people of Ishmael originate? and how did it come to be in the wilderness? how does it come by the sacred well where it dwells, and by the name of Ishmael? In many details also the two accounts agree; for example, in the fact that the God who speaks begins his words with a question to Hagar.

The conclusion from all this is that the two accounts are variants of one and the same story. The existence of such variants is not surprising, but rather the rule. These stories existed originally in oral tradition, and though we may have good reason for supposing our tradition to be very persistent and faithful, it is a matter of course that it cannot remain absolutely unchanged. Each one tells the story a little differently. When religion, ethical views, and æsthetic taste change, legend slowly follows them. Thus there arise variants and new versions. Such variants are found in our

book of Genesis in great numbers; the two accounts of Hagar are one of the most interesting examples of this.

The later collectors and editors, who put together all the material known to them, could not avoid the task of combining the variants into some sort of rational connexion. It is particularly instructive in the story of Hagar to watch the editor at his work. We have the first account from the hand of the Jahwist, the second from the hand of the Elohist; the editor who made them both a part of his work is therefore the editor of both Jahwist and Elohist, the so-called Jehovist. He could not leave the stories exactly as they were: Ishmael cannot be born, named, and brought up in the wilderness twice. Accordingly the editor left out in the first version Ishmael's growth, in the second his birth and name. But this was not sufficient. If in the first version Hagar flees, and in the second is cast out, then she must have returned to Abraham in the meantime; and the editor was obliged to state this expressly and give some reason for it. To this end he interpolated in the first account a command of the angel (xvi. 9): *Return to thy mistress and submit to the ill treatment which she inflicts upon thee.* And so poor Hagar has to go back home, only to be cast out later. The editor seems to have felt how hard the lot of Hagar was thus made, and in order to soften the matter a little he added a promise (10): *And the angel of Jahweh said unto her: I will multiply thy seed so that it may not be numbered for multitude.* That these words are an interpolation is evident from many indications; not only from the heavy style of the thrice-repeated "the angel of Jahweh said unto her," but especially from the fact that this command is out of accord with the whole course of the story: in the original story Jahweh intends to comfort Hagar for her humiliation, while in the addition he is sending her back into slavery; in the original form of the story Hagar has not at this point recognised the divinity, while the addition ignores this fact; moreover the promise that Hagar's descendants shall become a whole nation is too early here, for the story does not tell until later in the sequence that Hagar was to bear a son; the reverse would be the natural order. And so, although the additions are not entirely consistent with the original

legend, but actually spoil it, yet we must admit that the editor has performed his difficult and thankless task skilfully and with fidelity to the tradition.

But these are observations of minor importance. It is far more important and more interesting to compare the two variants. We have noted that such variants are often not accidental, but are small reflexions of great changes in the spiritual life of the people. Accordingly when we examine these variations we are no longer concerned with the works of individual authors or editors, but in fact with great currents of national life.

The two variants differ greatly in many details and especially in the tone of the whole. While the tender and emotional is prominent in the second version, in the first the tone is far more hearty and vigorous. This very important difference is seen especially in the drawing of the figure of Hagar. The first narrator enjoys the unbending force of the spirited woman; but the second story weeps over Hagar with many tears as a poor outcast slave. Accordingly the fortunes of Hagar differ much in the two versions: in the first case she fled in defiance; in the second she is driven away against her will. In the first case her distress consists in the mistreatment which her maternal pride will not endure, and the mistreatment affects herself alone; in the second case the distress consists in the expulsion itself: in the wilderness mother and child both incur the danger of death. For this reason the narrator of the second version lays all his stress upon the description of the misery of mother and child in the wilderness; the first version has not a single syllable for this misery. In the first version Sarah is jealous of the arrogant slave who is elevated to the rank of concubine; in the second, her jealousy is aimed at the slave child which she is not willing to have share the inheritance with her own. In the first version Hagar is acquainted with the wilderness: she goes, as her situation suggests, to the fountain in the wilderness; but in the second version she loses her way in the wilderness: not until God opens her eyes does she find a well. In the first story God hears of the mistreatment of Hagar; in the second, he hears the weeping of the child. All these differences result from the one capital difference, that in the

first story Hagar is painted in strong colors and vigorous shading; she is the genuine, defiant, untamable ancestress of the Bedouin; while in the second story the local colors are faded and Hagar has become the purely human figure of an outcast mother with her perishing child. From this point of view there can be no doubt that the first version is far older than the second. Later times had quite forgotten who Hagar really was: they no longer knew the tribe of Hagar. And the wilderness had grown more remote to the men of later times, who were themselves peasants or townsfolk: it seems to them only a land full of dangers, without paths or water. But at the same time—and this is the chief point—the times had become gentler and took more delight in tearful tales than in vigorous ones. We can find evidence elsewhere in Genesis of the increase of tenderer moods in later times.

This later origin of the second version is plainly seen in the fact that in the first version Ishmael receives his name, as is fitting, at his birth, while in the second he is not named until he is half-grown, which is clearly unnatural.—The religious conceptions of the second version are also later than those of the first. In the first, the divinity appears on earth in person; in the second, Hagar merely hears a voice from heaven. In the first, the divinity is pleased with the strong and vigorous woman—a religious conception with which we may perhaps compare that in the strenuous story of Samson; while in the second the religion too has become much gentler: the thought of God hearing the weeping of the child goes straight to the heart. The fact that the fountain was a place of worship is not prominent in either version; yet the first has preserved the primitive name of the god of the place. In any case, the second version is not servilely dependent on the first, but the changed form has been produced by a genuinely poetic soul and is at least the equal of the original: each in its way is a gem of legendary narrative.

I have finished. I have tried first to render the old legends alive again to the reader, and to introduce him to the moods and conceptions of olden time, and especially to the religious and ethical life of antiquity as it is displayed in these old tales. At the

same time I have tried to show the peculiar beauty of these remarkable narratives, and to interpret their style. But everywhere in the course of the investigation we have been led back to a history. For this is characteristic of the human mind, that it has a history; and it is impossible to interpret even the slightest spiritual product of man unless at the same time one gives its history. In these old legends, in which ancient Israel expresses itself without reserve, is found preserved the history of the national spirit of Israel. I have tried in the present chapter to give a few, even though humble, illustrations of this. I chose this particular legend for the reason that I believed that I could best exemplify the manner of investigation in a theme which does not involve dogmatic theories,—as might be the case in the story of Paradise. When all the stories have been investigated in this way, then we shall be prepared to draw pictures of ancient Israel that shall be true to life, and a history of its religious and ethical life in earliest times.

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THE FOOD OF LIFE AND THE SACRAMENT.

[CONCLUDED.]

MITHRAS WORSHIP.

THE Zarathustrian liturgy is called Yasna, or worship, and its most important part is the Myazda offering, accompanied with water libations, the Zaothra, and a communion of the sacred cup of the haoma drink. The Myazda is a small piece of flesh taken from a milch cow placed upon a round wafer or cake, called draona.[1] It is given to the faithful worshippers of Ahura Mazda with these words:

"Eat, O ye men, of this Myazda, the meat-offering, ye who have deserved it by your righteousness and correctness.

"Mayest thou, O Ahura Mazda, reign at thy will and with a saving power rule over thine own creation,' etc.[2]

ASSYRIAN RELIEF FROM NIMROD.[2]

All things connected with the Myazda ceremony are sacred, the words of the ritual, the wafers, the cup and the mortar in which the flour is prepared. Further, the twigs of pomegranate, date, or tamarind trees, which the priests hold in their hand; the cup and all other implements of this ceremony, are the weapons with

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[1] *Afûnagan*, 3. *Sacred Books of the East*, Vol. XXXI., p. 368.

[2] Illustrating a spring festival celebrated with sacred sprigs. Layard, *Mith.*, Plate XVI., 7a.

[3] *Yasna*, VIII. *S. B. of the E.*, Vol. XXXI., p. 229.

which Angra Mainyu, the evil spirit, is overcome, in the same way as Christians may be said to conquer Satan through the holy Sacrament. Zarathustra threatens to smite Angra Mainyu and all his demons of evil, "till the fiend-smiting saviour comes up to life out of the lake Kûsava from the region of the dawn," and he adds:[1]

"The sacred mortar, the sacred cup, the Haoma, the Words taught by Mazda, these are my best weapons. By this Word will I strike, by this Word will I repel, by this weapon the good creatures (will strike and repel thee), O Evil-doer, Angra Mainyu!"

The Saviour whose coming Zarathustra prophesies is the son of a virgin that became with child while bathing in the lake; and his name will be "the All-Conqueror, Righteousness Incarnate, the Benefactor, the Saviour." His arrival will usher in a millennium.

SIDE SURFACE OF A CONE OF CHALCEDONY.[2]

The world will be renewed; the dead will rise from their graves for judgment, and all the good will receive transfigured bodies that cast no shadows. This will be the Good Kingdom (*Vohu Khshathra*) or the kingdom wished for (*Khshathra Vairya*), which is personified as the spirit of God's Kingdom and plays a rôle not quite unlike to that of the Holy Ghost in Christianity.

The pious worshipper of Ahura Mazda prays for the coming of the kingdom:

"May Ahura Mazda strengthen us through the Royal Power of the kingdom." *Yasna*, XLV., 9.

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[1] *Vendîdâd* (Fargard XIX.). *S. B. of the E.*, Vol. IV., p. 203–207.

[2] Illustrating a spring festival celebrated with sacred sprigs. Layard, *Mith.*, Plate XVI., 7a.

The Yasna LIII. concludes with these words:

"Mazda, thine is that power and thine the kingdom, and by it thou bestowest the highest[1] [bliss] on the righteous poor."[2]

Mithras, an old solar deity, probably older than Zarathustra, becomes with the ascendancy of Ahura-Mazda one of the archangels

BAS-RELIEF OF NEUENHEIM.[3]

and is more and more identified with the virgin-born Saviour whose coming Zarathustra has promised, assuming in the end a rank anal-

[1] The *summum bonum*.

[2] *Zend-Avesta*, Part III. *S. B. of the E.*, Vol. XXXI., p. 194.

[3] This monument which has escaped the fate of mutilation by the hands of fanatics, was discovered in 1838 in a cave near Neuenheim, west of Heiligenberg, by workmen laying the foundation of a farm house. It is interesting because it shows very clearly twelve small bas-reliefs exhibiting scenes from the life of Mithras, beginning with his birth from the rocks on the top of the left border passing over to the right side where he catches the bull, carrying him to the cave so as not to show the footprints of his hoofs and ending on the top border, where his ascent to Ahura Mazda is represented. Some of the scenes have not yet been explained satisfactorily. Of interest is the second one, in which Ahura Mazda hands to Mithras the scepter of the government over the world.

ogous to that which Christ holds in Christianity. In the *Yast* we read:

"Ahura Mazda spoke to Spitana Zarathustra, saying: 'Verily, when Mithra, the lord of wild pastures,[1] O Spitana, I created him as worthy of s as worthy of prayer, as myself, Ahura Mazda.'"

In the days of Alexander the Great, Mithras worship officially established in Persia Christian religion is to-day i rope, and the king regarded h as "the king of kings, kin gods, seated on the throne to with Mithras, the god, and with the sun."[2]

MITHRAS BETWEEN THE DIOSCURI. (Ancient gem.) Underneath the altar with the Myazda wafers and the cup of the Mithraistic Eucharist.[3]

There can scarcely be any about the historical connexion Mithras worship of ancient with the Mithras worship that to spread over the Roman Empire at the time of Trajan (9 A. D.). During the second tury it became the favorite re of the Roman armies and soon through the districts on the Da the Rhine, Gaul, Dacia, Afric of course also reached Rom is probable, however, that th contact with Chaldæan supers and astrological beliefs the o purity of the faith of the Zend was lost in the later Mithras ship.

MITHRAS MONUMENT OF OSTBURKEN.[4]

[1] The word "wild" is probably an inept translation and might have b placed by "wide, unbounded," or should be interpreted as "of natural gro

[2] *βασιλεὺς βασιλέων καὶ θεῶν συγγενὴς, σύνθρονός τε θεῷ Μίθρᾳ καὶ συναναπ ἡλίῳ.* See Franz Cumont, *Textes et monuments figurés relatifs aux myst Mithra*, II., pp. 37–38. Brussels, 1896.

[3] From Walsh, *Ancient Coins, Medals, and Gems.*

[4] Springer's *Handbuch der Kunstgesch.*, I. p. 283.

Mithras resembled Christ in several most significant features. He is not Ahura Mazda, the Lord Omniscient, himself, but a divine person equal in dignity to him; he is the high-priest of an atonement through blood, a saviour from eternal damnation, a leader in battle for the cause of righteousness, and a conqueror against whom the hosts of the fiend cannot prevail.

MITHRAS BORN FROM THE ROCKS.
Holding in his hand the grape which replaces in the West the Haoma of the Persians.[1]

Mithras was born into the world from the rocks, perhaps symbolising the origin of fire from flint, and worshipped by shepherds, for the Persians are a pastoral people. He performed deeds of valor and slew, at the request of the Lord Omniscient, the glorious primordial bull from whose body he shaped the animate creation. He is called the

A MITHRAISTIC CAMEO.
Showing Mithras born from the rocks between the Dioscuri, surrounded by Mithraistic symbols, among them the cup and bread of the Eucharist.

mediator (ὁ μεσίστης),[2] because before the end of this world he will rescue his creatures from sin through the sacrificial atonement of

[1] Reproduced from F. Cumont, p. 231, after Lajard, Plate CIII.

[2] Plutarch, *De Isid. et O.*, 46.

Fig. 212.

Fig. 211.

Fig. 213.

FRAGMENTS OF A BAS-RELIEF IN WHITE ITALIAN MARBLE.
Found in the Zollfeld, now in the Historical Museum of the Rudolfinum at Klagenfurt, Austria.[1]

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[1] The central part of the monument is utterly destroyed, probably by Christian iconoclasts; the head of the sun-god from the left-hand corner alone being left.

the blood of another bull of similar significance. Having fought the good fight for the salvation of mankind, Mithras ascends to heaven and prepares the millennium for his good and faithful followers.

The mysteries of Mithras were celebrated in a cave which Porphyry calls a symbol of the universe.[1] In spite of the rigid monotheism of the Zendavesta, Mithras worship did not come

MITHRÆUM, WEST OF THE VILLAGE OF PETRONELL, NEAR HINTAUS RIED, AUSTRIA.[2] (Restored by Mr. Tragau.)

into conflict with the Pantheon of the Greek and Roman gods, for many of these were re-interpreted as equivalents of certain religious conceptions of Iran. Ahura Mazda was called Zeus Or-

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The left border represents a Hellenised illustration of Ahura Mazda's struggle with demons, after the pattern of the *giganto machia*. The lower part of the same fragment exhibits the birth of Mithras and two shepherds who figure as torch-bearers. The right border shows scenes from the life of Mithras, among them Mithras crowning the sun-god with a halo of rays and ascending in the solar chariot to heaven.

[1] *De Antr. Nymph.* εἰκόνα φέροντες τοῦ σπηλαίου τοῦ κόσμου.

[2] This Mithræum, like all others of the same style is underground. Before the great bas-relief of Mithras slaying the bull are two altars, the one large and square in form, the other smaller and richly ornamented. The small statue on the left is Mithras being born from the rocks. At the entrance we see on the right the lion of Mithras and on the left a fount for holy water. The two torch-bearers have their stand at the pillars which separate the aisles. The Mithræum is approached by a staircase and through a square hall (or pronaos) which is considerably larger than the sanctum itself.

madz; a personification of the Haoma drink was identified with Dionysus. The sun became Helios, the moon Artemis, the seven planets were represented after Greek fashion, etc.

The sacred cup and the bread wafers are frequently represented upon Mithraistic medals, and the church-fathers declare that devils had imitated in the Mithraistic rites the sacraments of the Lord. With all due deference to the opinion of these saintly men, we must remember that Mazdaism with its sacramental rites including the offering of the Haoma drink and the Myazda cakes, is older by several centuries than Christianity.

ÆON OR ZRVAN AKARANA.
Unlimited Time.[1]

Monuments discovered all over the Roman Empire constitute one of the most important sources of Mithras worship. Few of them are in good preservation, for the religious fanaticism of the third and fourth centuries destroyed some and mutilated others. Some figures are quite puzzling at first, but patient inquiry has succeeded in unravelling all the salient features of this remarkable religion.

There are innumerable Mithraeums with altar-pieces representing the sacrifice of the sacred bull by the hand of Mithras, on either side a daduchos or torch-bearer, one holding his torch upward, the other downward. There are innumerable gems with Mithraistic symbols on them, and scenes from the life of Mithras, among them the official transfer of the

[1] The statue here reproduced was found in the Mithraeum of Ostia, where C. Valerius Heracles and his sons dedicated it in the year 190 A.D.; it was figured for the first time by Lajard in his *Recherches sur Mithra*, Plate LXX. Similar statues are found in various Mithras caves.

world's government to him by the Creator Ahura Mazda, his divine father.

SASSANIAN BAS-RELIEF. ORMAZD PRESENTS THE CROWN TO ARDASHIR.
(From Curzon, *Persia*, II. p. 125.)

ORMAZD WITH THE CIRCLE OF SOVEREIGNTY AND THE SCEPTRE OF POWER.
(From the Sassanian bas-relief.)

On ancient Persian monuments Ahura Mazda is represented mostly as governing the world and giving umbrage to kings or as

transferring the ring of sovereignty to his anointed vicegerents on earth. They differ from Christian representations of analogous scenes mainly in exhibiting a more martial character.

Æon, the lion-faced, with key, torch, and measuring staff is a divinity of considerable importance in the religion of Mithras. He is the Zrvan Akarana (Time unlimited) of the *Zend Avesta*, not so much a personality as a personified abstraction, representing the

THE TAKHT-I BOSTAN SCULPTURE.[1]

primordial state of existence from which Ahura Mazda is born. Statues of Æon are found in many Mithræums, displaying re-

[1] Not far from Behistan near the city of Kermânshâh in the valley of Takhtî-Bostan there are sculptures on a rock supposed to contain a representation of Zoroaster. The sixth group, which is the last in the row, exhibits three standing figures with a fourth one being trampled under foot by the two crowned men on the right hand side. It may represent Ormazd or Ahura Mazda, the Lord Omniscient handing the ring of sovereignty to Mithras after the final conquest of Ahriman. But it may as well be an Iranian king rewarding his victorious son by making him sharer in the rule of empire. The downtrodden foe would be the enemy of Mazdaism, a figure representing the conquered Arsacidæ. The man behind the King standing upon a tree, holding a staff in his hands and surrounded with a halo of rays is commonly and perhaps without exception assumed to be Zoroastra the prophet.

markable crudity of invention. The serpent's coils that surround his body represent the revolutions of time, his wings the four seasons. His relation to the deities of the Greek pantheon, Hephæstus, Æsculapius, Hermes, and Dionysius, is indicated by the presence of their emblems.

MITHRAS AND KING ANTIOCHUS OF COMMAGENE.

AHURA MAZDA AND ARTAGENES.

Bas-reliefs of a temple built by Antiochus I. (69–34 B. C.) on the Nemrood Dagh, Taurus Mountains.[1]

The most important passages concerning Mithras worship are found in the writings of Justinus Martyr and Tertullian. Justinus says:

"The Apostles, in the memoirs composed by them, which are called Gospels, have thus delivered unto us what was enjoined upon them; that Jesus took bread, and when he had given thanks, said, 'This do ye in remembrance of me, this is my body;' and that, after the same manner, having taken the cup and given thanks, he said, 'This is my blood'; and gave it to them alone. Which the wicked devils have imitated in the mysteries of Mithras, commanding the same thing to be done. For, that bread and a cup of water are placed with certain incantations in the

[1] From Franz Cumont (*l. l.*, p. 188) after Hermann und Puchstein, *Reisen in Klein Asien*, Berlin, 1890, Plate XXVIII., 2, cf. pp. 321 ff., and Plate XXXI., 1.

mystic rites of one who is being initiated, you either know or can learn." *Ante-Nicene Christian Library*—Justin Martyr, Vol. II., p. 65.

Tertullian is a little more explicit, but agrees in sentiment as well as in his opinion with Justinus Martyr. In a passage where he declares that Christian heresies like Pagan religions are in-

MITHRAS THE SAVIOUR. (Borghesi Monument, now at the Louvre in Paris.)[1]

ventions of the Devil, he mentions Mithras worship on account of its obvious similarity to the Christian ritual, adding that even the ideal of chastity is recognised by the Pagans, since they have insti-

[1] The monument bears the inscription "Deo Soli Invicto Mithrae." Mithras sacrifices in a cave a bull for the forgiveness of sins. A dog licks the dripping blood, called "nama sebesion" (the sacred fluid). A serpent crawls on the ground. A scorpion pinches off the bull's testicles. A youth at the left turns a torch upwards, at the right, downwards. A raven, which here looks like an owl, witnesses the scene. Over the cave, the sungod, Helios, and the goddess of the moon, Selene, drive past in their chariots.

ns like Christian nunneries, and their high-priest, being a wer, is not allowed to marry again. He must be one wife's and for time and eternity, an injunction which St. Paul would make for a Christian bishop (1 Tim. iii. 2).

STATUES OF TORCHBEARERS IN A MITHRÆUM OF OSTIA.
Now in the Lateran.

Tertullian says in his prescription against heretics, Chap. XL:

'The very Scriptures were even arranged by the will of God in such a manner furnish materials for heretics, inasmuch as I read that 'there must be her- ' which there cannot be without the Scriptures.

'The question will arise, By whom is to be interpreted the sense of the pas- which make for heresies? By the devil, of course, to whom pertain those which pervert the truth, and who, by the mystic rites of his idols, vies even the essential portions of the sacraments of God.

"He, too, baptises some,—that is, his own believers and faithful followe
he promises the putting away of sins by a laver [of his own]; and if my mem
still serves me, Mithra there [in the kingdom of Satan] sets his marks on the fo
heads of his soldiers; celebrates also the oblation of bread, and introduces an
age of a resurrection, and before a sword wreathes a crown.

SILVANUS.

Picture in the niche of a sanctury connected with the Mithræum in Ostia near the baths built by Antoninus Pius. Silvanus is ready to act as a priest of Mithras, having in one hand a fir branch, in the other a hatchet such as are frequently found in the ruins of Mithræums.

"What also must we say to [Satan's] limiting his chief priest to a si
marriage? He, too, has his virgins; he, too, has his proficients in contine
Suppose now we revolve in our minds the superstitions of Numa Pompilius,
consider his priestly offices and badges, and privileges, his sacrificial services,
and the instruments and vessels of the sacrifices themselves, and the curious

of his expiations and vows: is it not clear to us that the devil imitated the well-known moroseness of the Jewish law?

"Since, therefore, he has shown such emulation in his great aim of expressing, in the concerns of his idolatry, *those very things of which consists the administration of Christ's sacraments*, it follows, of course, that the same being, possessing still the same genius, both set his heart upon, and succeeded in, adapting to his profane and rival creed the very documents of divine things and of the Christian saints,—his interpretation from their interpretations, his words from their words, his parables from their parables. For this reason, then, no one ought to doubt, either that 'spiritual wickednesses,' from which also heresies come, have been introduced by the devil, or that there is any real difference between heresies and idolatry, seeing that they appertain both to the same author and the same work that idolatry does."

The crown was a Christian symbol, and the sword of martyrdom was welcome to those who were eager to receive the crown of

PLAQUE OF HELIOTROPE AGATE REPRESENTING MITHRAISTIC SYMBOLS.
(Engraved in intaglio and used as a seal.)

life of which the Apostle speaks,—a crown of unfading flowers. The soldiers of Mithras, which is the name of one of the seven degrees, were, when initiated into the fraternity, made conscious that they must be fighters, and so a sword was placed on their heads, for they should be ready to die for the cause of the god of

[1] The front exhibits the bull-slaying Mithras, the dadouchoi or torch-bearers, the dog, the scorpion, the raven, the snake (mostly destroyed) the sun-god, the moon-goddess, all of which occur on every Mithras monument, and in addition an eagle with spread wings, the seven planets (not counting the sun before the sun-god which was a different shape) the thunderbolt of Zeus, the harp of Saturn (below the mantle of Mithras and partly injured), a halo of rays with a cross, a tree with a mask (perhaps a skull), the staff of Hermes, an arrow (of Mars?). The reverse represents the lion of Mithras with a bee in his mouth and the seven planets with their names in an unknown tongue. The frequent occurrence of EL and AL, i. e., God, the former form appearing five times, the latter twice, indicates that we have to do with a semitic dialect.

light, but at the same time they should scorn the transient flowers of worldly crowns, because a soldier of Mithras glories only in the immortal crown that will never perish, which is Mithras. Tertullian says in the last chapter of his essay on the crown:

"What have you in common with the flower which is to die? You have a flower in the Branch of Jesse, upon which the grace of the Divine Spirit in all its fulness rested,—a flower undefiled, unfading, everlasting, by choosing which the good soldier, too, has got promotion in the heavenly ranks. Blush, ye fellow-soldiers of Christ, henceforth not to be condemned even by him, but by some soldier of Mithras, who, at his initiation in the gloomy cavern, in the camp, it may well be said, of darkness, when at the sword's point a crown is presented to him, as though in mimicry of martyrdom, and thereupon put upon his head, is admonished to resist and cast it off, and transfer it to his shoulder, saying that Mithras is his crown. And thenceforth he is never crowned; and he has that for a mark to show who he is, if anywhere he be subjected to trial in respect of his religion; and he is at once believed to be a soldier of Mithras if he throws the crown away,—if he say that in his god he has his crown. Let us take note of the devices of the devil, who is wont to ape some of God's things with no other design than, by the faithfulness of his servants, to put us to shame, and to condemn us."[1]

Professor Franz Cumont, perhaps the best authority on the subject, sums up his opinion as follows:

"When the reader reconsiders what we have stated about the religion of Mithras, he will be surprised at its similarity to Christianity. Like the Christians, so the adherents of the Persian god lived in close relationship with one another, using the terms 'fathers' and 'brothers.' Like the Christians, they had baptism, a kind of communion; they taught an imperative morality, preached continence, chastity, self-abnegation, and self-control. They speak of a deluge, believe in the immortality of the soul as well as the resurrection of the dead, in a heaven of the blessed ones and a hell inhabited by the powers of evil. We have seen that the theology of the mysteries conceived Mithras as equivalent to the Alexandrian Logos. We may fairly assume that these features are not the sole similarities between him and Christ, and that the illustration of the god sacrificing against his

[1] I refrain from heaping quotations, and refer the reader to the second volume of Franz Cumot's work on the texts and monuments of Mithras (quoted above) which contains a diligent collection of almost six hundred passages relating to Mithras worship. The enormous number of Mithraistic monuments and allusions to Mithras in the writings of antiquity prove the great extension of Mithras worship. For our present purpose no passages are of more importance than those quoted above.

inclination the primordial bull[1] for the purpose of creating the human kind and then redeeming it from death, has been compared with the Saviour who sacrificed himself for the salvation of the world. We could even trace the worship of the shepherds, a communion scene, and an ascension of Mithras to heaven in those legends. Augustine tells us that he had met a Mithras priest (*Pileati sacerdotem*[2]) who used to say, "The Hooded One himself is Christian" (*et ipse Pileatus christianus est*). Since the second century the pagan philosophers began to contrast the Persian mysteries with Christianity, apparently to exhibit their superiority (Celsius in Origen's *Contra Celsium*), while on the other hand the church-fathers insist on the explanation of these analogies between both religions as due to an imitation of devils."[3]

Considering the similarity of the Christian communion to the Myazda offering of the Mithras worshippers, the suggestion offers itself that the very name of the Lord's Supper among the Romans, which is *Missa* (or in English "Mass"), the etymology of which is as yet an unsolved problem, might have been derived from the word *Myazda*.[4]

If Mithras worship was so similar to Christianity, the question seems in order as to why it disappeared and left no traces. M. Renan goes so far as to say that if Christianity had ever been checked in its expansion, the world would now be Mithraistic. We beg to differ from this opinion and would suggest the following explanation as the most plausible reason for the failure of Mithraism.

Mithras worship, as practised in the Roman camps, was not so much a religion free to all and preached on the housetops, as a ceremonial of a secret society. Accordingly a Mithræum was not so much like a church as it was like a masonic lodge, and the worshippers of Mithras were not a congregation open to the rich and the poor alike, but an aristocratic fraternity of seven degrees, the

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[1] Christ is frequently compared to a white bull in the Book of Enoch and other apocrypha.

[2] Pileatus, i. e., "the Hooded One," is a cognomen of Mithras.

[3] Roscher's *Lex. d. G. u. R. Mythologie*, pp. 3066–3067.

[4] We deem it not at all improbable that the word "Myazda" was imported into Hebrew to denote the unleavened bread, eaten at the festival of the unleavened bread, which is called in the Bible מַצָּה (*matztza*). This term does not look like an original Hebrew word, and is certainly not derived from the Hebrew root of the same sound מצה, which means "to suck."

members of which had to be initiated by passing through an elaborate system of ordeals, of which traces are perhaps still preserved in the masonic order. While Mithraism was apparently very exclusive, Christianity adopted many Mithraistic conceptions and institutions. Christian authors set forth with a logic that is peculiarly their own the arguments as to why it was proper to celebrate the Nativity of Christ on the very same day on which the Pagans celebrated the nativity of Mithras.[1]

For a while Mithraism flourished, especially after the reign of Commodus who was initiated into its mysteries. It was fashion-

MITHRAS BORN FROM THE ROCKS.[2]
With the dagger of sacrifice symbolising the vicarious atonement through blood and the torch of enlightenment.

SOL THE SUN-GOD.[2]
Installed by Mithras as the governor of the world, as indicated by the halo of rays and the globe of power.

able, and presumably expensive. But when Constantine threw the weight of imperial favor into the balance of Christianity the fate of Mithraism was sealed forever.

Whether or not the Zarathustrian Myazda offering is historically connected with the Assyrian myth of the food of life, we have no means of ascertaining, but we need not hesitate to say that prob-

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[1] For details see *The Open Court*, Vol. XIII., No. 12, pp. 725—730, in an article on "The Nativity."

[2] Reproduced from Cumont (*l. l.* II., p. 188, figures 10 and 11).

ably it is. At any rate, it is based upon the same idea, and there are analogous institutions among savages and semi-civilised people all over the world.

CHRISTIAN RITES: THE BREAKING OF BREAD, THE AGAPE AND THE LORD'S SUPPER.

Considering the all but universal usage of symbolising the preservation of life by a sacramental eating of some primitive food, we must expect to find traces of the idea in the ritual of the Hebrews; and indeed communion meals are a fundamental principle in the ancient Jewish institutions. The father of the family broke the bread and gave thanks, saying: "Blessed is he who created the fruit of the earth"; and raising the cup, he added: "Blessed is he who created the fruit of the vine."[1] This custom was most punctiliously adhered to by all pious Jews, and we know that Jesus observed this tradition of his people whenever an opportunity offered itself. This appears especially from the Synoptic Gospels where they relate the miracle of the five loaves and the fishes. Mark (the oldest account of the three) says[2]:

"And when he had taken the five loaves and the two fishes, he looked up to heaven, and blessed, and brake the loaves, and gave them to his disciples to set before them; and the two fishes divided he among them all."

The same miracle is reported twice by Matthew and Mark, only with this variation that the second time seven loaves are mentioned instead of five, and seven baskets full are saved instead of twelve.[3]

The congregation of Jerusalem continued the practice of breaking bread, which (as we learn from Acts ii. 42) was not done in the temple, or in a synagogue, or in any official place of worship, but in the houses of the Nazarene brethren.

That the early Christians celebrated love feasts or feasts of charity is apparent from passages in the second epistle of St. Peter

[1] "Benedictus qui creavit fructum terrae; benedictus qui producit panem e terra;" and "benedictus qui creavit fructum vitis." 1. Tr. Beraehoth VI. 1.

[2] See also Matth. xiv. 19, and Luke ix. 16.

[3] See Matth. xv. 36, and Mark viii. 6.

and the epistle of St. Jude;[1] the custom is also alluded to in the Revelation of St. John; and judging from the description of early Christian life at Jerusalem in the Acts, we cannot doubt that the communal meals of the Christians were simply a continuation of the same pre-Christian practice. There is no evidence whatever for the assumption that in the early days of Christianity the eucharist and the agape were different institutions. On the contrary they are quite undistinguishable, and if there is anything that characterises them in distinction from ordinary meals it is the practice of breaking the bread and giving thanks. This practice, however, is (as we have seen) not exclusively Christian, but was practised in Judæa, mainly by earnest sectarians, such as the Nazarenes and the disciples of St. John the Baptist, congregations, which, as we know, had been exposed to Persian influences and entertained many Gnostic notions. It is peculiar that the days for these communal meals of breaking the bread and giving thanks were not the Sabbath, but the Sunday, the sacred day of Mithras.

The disciples at Troas are specially reported to have met on Sundays. That Paul should have introduced this custom in celebration of the rising of Christ is neither reported in the Acts nor is there any justification to imply it. The day of resurrection was by no means fixed among the early Christians, for sometimes it is reported that Christ would rise on the third day, and then again after three days, which would bring the event down to Monday in the afternoon. The statement in the Acts is quite explicit that the congregation of disciples whom St. Paul visits in Troas celebrated Sundays with a communal bread-breaking before their conversion, and the fact is represented as the prevailing custom in these words:

"And we sailed away from Philippi after the days of unleavened bread, and came unto them to Troas in five days; where we abode seven days.

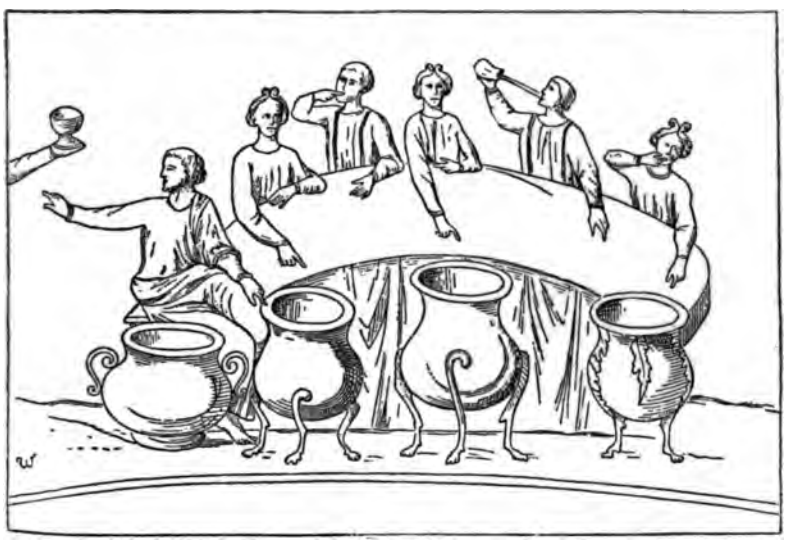
"And upon the first day of the week, when the disciples came together to break bread, Paul preached unto them, ready to depart on the morrow; and continued his speech until midnight."

We cannot very well assume that "the disciples of Troas" were Christians before St. Paul's arrival. Disciples is a name of

[1] Ep. St. Jude 12.

the Zabeans, the sect to which John the Baptist belonged as we know, e. g., from the report in Chapter xix. of the Acts. The respect paid to the sun by the Essenes, with other indications of Mithraistic influences, makes it probable that it was an un-Jewish influence which caused the Sunday to be so commonly regarded as the proper day for the celebration of love feasts.

The Christian love feast, or as the Greek called it, *agape*, was a common dinner, and we learn from the first Epistle of St. Paul to the Corinthians that its celebration was very different from both



THE MARRIAGE FEAST OF CANA REPRESENTED AS A EUCHARISTIA.
Fresco in the cemetery of St. Pietro e Marcellino.

the Roman Mass and the Lord's Supper of the Protestants. It was different, too, from the Nazarene bread-breaking of the early Christians at Jerusalem. It was no longer taken in the homes of the brethren (as practised by the Nazarenes of Jerusalem), but in the church after the fashion of modern picnics, and was even less brotherly; for every one brought his own meal along and ate for himself. It lacked dignity and was sometimes disturbed by disorderly conduct. St. Paul takes the Corinthians severely to task and requests them to remember in their "eucharistia" the sacrificial death and the resurrection of the Lord.

As the passage is of great importance, we quote it in full:

"When ye come together therefore into one place, this is not [the way] to eat the Lord's supper.

"For in eating every one taketh before other his own supper: and one is hungry, and another is drunken.

"What? have ye not houses to eat and to drink in? or despise ye the church of God, and shame them that are needy? What shall I say to you? shall I praise you in this? I praise you not.

"For I have received of the Lord that which also I delivered unto you, That the Lord Jesus the same night in which he was betrayed took bread:

"And when he had given thanks, he brake it, and said:

"Take, eat: this is my body, which is broken for you: this do in remembrance of me.

"After the same manner also he took the cup, when he had supped, saying,

"This cup is the new testament in my blood: this do ye, as oft as ye drink it, in remembrance of me.

"For as often as ye eat this bread, and drink this cup, ye do show the Lord's death till he come.

"Wherefore whosoever shall eat this bread, and drink this cup of the Lord, unworthily, shall be guilty of the body and blood of the Lord.

"But let a man examine himself, and so let him eat of that bread, and drink of that cup.

"For he that eateth and drinketh unworthily, eateth and drinketh damnation to himself, not discerning the Lord's body.

"For this cause many are weak and sickly among you, and many sleep.

"For if we would judge ourselves, we should not be judged.

"But when we are judged, we are chastened of the Lord, that we should not be condemned with the world.

"Wherefore, my brethren, when ye come together to eat, tarry one for another.

"And if any man hunger, let him eat at home; that ye come not together unto condemnation. And the rest will I set in order when I come." (1 Cor. xi. 20–34.)

The moral seriousness of St. Paul's reformatory activity wrought a great change in the celebration of the eucharist.

The next important report as to the way in which the sacrament was celebrated among the early Christians is found in the first apology of Justin Martyr, which reads as follows:

"After the believer is baptised, and so incorporated or made one with us, we lead him to the congregation of the brethren, as we call them, and then with great fervency pour out our souls in common prayers both for ourselves, for the person

baptised, and for all others all the world over; that having embraced the truth, our conversation might be as becometh the Gospel, and that we may be found doers of the word, and so at length be saved with an everlasting salvation. Prayers being over, we salute each other with a kiss. After this, bread [and a cup of wine[1]] and water are brought to the president or bishop, which he takes, and offers up praise and glory to the Father of all things, through the name of His Son and the Holy Spirit; and this thanksgiving to God for vouchsafing us worthy of these His creatures, is of a prayer of more than ordinary length. When the bishop has finished the prayers and the thanksgiving service, all the people present conclude with an audible voice, saying Amen. Now Amen in the Hebrew tongue is, 'So it be.' The Eucharistical office being thus performed by the bishop, and concluded with the acclamation of all the people, those we call deacons distribute to every one present to partake of this Eucharistical bread [and wine] and water, and then they carry it to the absent.

"This food we call the Eucharist, of which none are allowed to be partakers, but such only as are true believers, and have been baptised in the laver of regeneration for the remission of sins, and live according to Christ's precepts; for we do not take this as common bread and common wine; but as Jesus Christ our Saviour was made flesh by the Logos of God, and had real flesh and blood for our salvation, so are we taught that this food, which the very same Logos blessed by prayer and thanksgiving, is turned into the nourishment and substance of our flesh and blood, and is in some sense the flesh and blood of the incarnate Jesus. . . ." "After this sacrament is over, we remind each other of the obligations to duty, and the rich relieve the poor; and upon such charitable accounts we visit some or other every day."

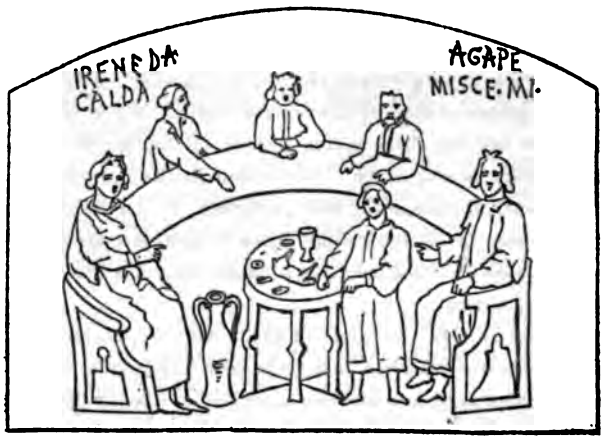
Justin adds the significant complaint quoted above on page 353, last paragraph, that through a strange contrivance of the evil spirits the same ceremony was celebrated in the same way by the worshippers of Mithras, the Christ of Mazdaism.

That in the days of St. Paul the Pagans celebrated love feasts which resembled the Christian sacraments becomes manifest from the contrast which appears in the apostle's speaking of the Lord's cup and the cup of devils, that is to say, of the Pagan deities.

We notice at the time of Justin Martyr one important change in the Christian sacrament since the days of St. Paul. The celebration of the Eucharist is no longer a real meal, as it was in Jeru-

[1] Harnack regards the mention of the wine as an interpolation, as will be seen later on, and claims that the elements of the Lord's Supper in the early Church were as a rule bread and water, and only exceptionally bread and wine.

salem among the Nazarenes and in the congregation at Corinth, but has become a purely symbolical partaking of the sacred bread. In the days of St. Paul the Lord's Supper or Eucharist was identi-



CHRISTIAN LOVE FEAST.
Fresco in the cemetery of St. Pietro e Marcellino.

cal with the agape or love feast, the Roman *charistia*. When the communion (i. e., the meal taken in common) under the influence

CHRISTIAN LOVE FEAST.
Fresco in the cemetery of St. Pietro e Marcellino.

of St. Paul's conception of it, ceased to be a real meal and changed into a mystical ceremony after the pattern of the Mithraistic ritual, the agapes continued to be celebrated and we find now two distinct

institutions, the mass and the agape or brother-meal. The latter is frequently pictured in the Catacombs, and we reproduce here one of the most typical representations of it, which was discovered in a subterranean chapel in the cemetery of Marcellinus and Peter.

Charles Maitland, in his interesting book, *The Church in the Catacombs: A Description of the Primitive Church of Rome*, speaks of the subject as follows (p. 209):

"In this painting the three guests are seen seated, and a page supplies them with food from the small round table in front, containing a lamb and a cup. The two matrons who preside, personifying Peace and Love, have their names written above their heads, according to the Etruscan practice.

"The inscriptions should be read: '*Irene—Da calda* (*m aquam*);' and, *Agape —Misce mi* (*vinum cum aquâ*),' i. e., 'Peace, Give hot water; Love, Mix me wine.'

"The original Agape, or love-feast, was a truly Catholic element of ancient Christianity. Begun in the purest spirit, it shared the fate of some other ordinances, till in the fifth century it became a scandal to all Christendom. It is first mentioned by St. Jude, in the passage, 'These are spots in your agapæ,' *ev ταῖς ἀγάπαις ὑμῶν*, translated in our version, 'feasts of charity.'"[1]

How similar the Pagan love feasts were to the Christian eucharist appears from the similarity of the pictures of both institutions; and both were held to have same mystic reference to the life beyond the grave. We here reproduce the illustrations of the tomb of Vibia, wife of Vincentius, a priest of Sabarios (Dionysos). Vibia is snatched away by Pluto after the manner of the rape of Proserpine, Hermes, the leader of souls to Tartarus leading the way. In the second picture she appears led by Hermes and Alcestis (the classical prototype of a faithful wife) before the throne of Dispiter and Aeracura, the Jupiter infernus and Juno inferna. Three fates attend the scene.[2] The gesture of the judge indicates that Vibia is deemed worthy of being admitted to the bliss of Ely-

[1] Maitland is mistaken in several points; the first mention of the Christian "agape" is not by St. Jude, but in St. Paul's Epistles, and the excesses of the Christian love-feasts did not make their appearance later on, but were noticeable at the very start. We may assume that the Pagan love-feasts were sometimes not much better.

[2] It is strange that one of the fates is apparently a man.

sium; and an angel[1] (angelus bonus) conducts her to the eucharist of the blessed in the Elysian fields. On the third picture Vibia appears twice at the entrance and at the table of the celestial banquet.

THE RAPE OF VIBIA AND HER DESCENT.

BEFORE THE TRIBUNAL OF THE RULER OF THE NETHER WORLD.

The last picture shows Vincentius himself as one of the seven priests of Sabazios seated at the Dionysian eucharist. Each loaf

[1] The idea of angels is not exclusively Christian but was quite common in classical antiquity at and long before the age in which Christianity originated. Plato speaks of "the angel of Elysium" in *Rep.* X. p. 619 B.

of bread on the table bears an equilateral cross with dots between its arms, according to ancient Roman custom.[1]

THE PROBLEM OF THE INSTITUTION OF THE LORD'S SUPPER.

Justin quotes in his report the institution of the Lord's Supper from the memoirs (*apomneumata*) of the apostles called the gospels

THE LOVE FEAST IN THE ELYSIAN FIELDS.

THE SEVEN PRIESTS, VINCENTIUS AMONG THEM.

(which of course need not be our Gospels) and it is true that Mark, the oldest, and also Matthew and Luke contain the Eucharist formula in almost the same words. In addition the formula is mentioned in the so-called apostolic traditions which are supposed to

[1] The illustrations are reproduced from Ernst Maass, *Orpheus*.

have been established in the second century A. D., but may, in part, reach back to the earliest days of Christianity. As the Gospels in the shape in which we have them are later than the Epistles of St. Paul, the theologians of the critical school deem it probable that the Gospel accounts of the institution of the Lord's Supper are influenced by St. Paul's views. Mark (whom Luke and Matthew follow almost literally) describes the institution of the Lord's Supper as follows:

"And as they did eat, Jesus took bread, and blessed, and brake it, and gave to them, and said, Take, eat: this is my body.

"And he took the cup, and when he had given thanks, he gave it to them: and they all drank of it.

"And he said unto them, This is my blood of the New Testament, which is shed for many.

"Verily I say unto you, I will drink no more of the fruit of the vine, until that day that I drink it new in the kingdom of God." (Mark xiv. 22–25.)

As to the use of the drink we shall notice on a careful perusal of the passages in question that Paul, as well as the Gospel writers, carefully avoids any definite designation, but speaks of the cup only, which, according to Paul's testimony, Jesus called "the cup of the New Testament in my blood."

Justin (at least in those MSS. from which most of the present text-editions have been made) speaks of water and wine, and at present pure wine is used in the sacrament. But we know that the oldest churches were not limited to a definite drink, but frequently used water. It was only with the consolidation of the Church under Roman influences and when its institutions assumed a definite shape that the nature of the drink was officially prescribed by ecclesiastical authorities to be a mixture of wine and water which was later on changed to pure wine, and those congregations who did not obey were ostracised as heretics.

Professor Harnack's Essay on Bread and Water[1] contains irrefutable evidence that the elements of the sacrament were not definitely determined among the early Christians. Even as late

[1] Published in *Texte und Untersuchungen zur Gesch. der Altchr. Literatur* VII, 2 pp. 115–144.

as the fifth century many Christian congregations celebrated the Eucharist by partaking of bread and water alone. Not only did the Ebionites and other sects of ascetic tendencies abstain from wine in the sacrament, but we know positively from the sixty-third letter of Cyprian that the Catholic Churches of Africa clung to the same practice and African bishops are quoted as claiming in their favor (1) the authority of the scriptures, (2) the commendability of the practice and (3) tradition. We must remember that the wine as the drink of the Lord's Supper is nowhere explicitly mentioned in the New Testament, and St. Paul, apparently not without some good reason, uses the non-commital term *ποτήριον* (drink), when we should expect the word "wine." Cyprian's condemnation of the use of water as a heretical practice and the weakness of his arguments are the best proof that the African tradition was neither isolated nor limited to ascetic circles, but based upon an old and well established authority. Professor Harnack believes according to the Gospel report, that Jesus at his last supper drank wine and not water, but he claims that water was the usual and preferred drink of the Lord's Supper among the early Christians which can be established on the authority of Justin the Martyr who never speaks of the wine of the sacrament, and once speaking of the water of the mysteries directly identifies it (*ὕδωρ πιστόν*) with the Eucharist cup.

Further whenever Justin mentions the blessing of Juda, where Juda is compared to a vine, or to the fruit of the vine, the grape, or where he compares Christ with Dionysus, the God of wine, he never mentions the Eucharist.

The reading *οἶνος* in two passages of the latter kind is a corruption of the text for *ὄνος*. Thus the fact that both Dionysus and Christ make their entry on a donkey is more striking to Justin than the symbolic significance of the wine in both religions. In three other passages the words *οἶνος*, wine and *κρᾶμα* mixed drink, appear by the side of the terms "bread and water," but they are

[1] For further details we refer the reader to Professor Harnack's essay "Bread and Water the eucharist elements of Justin." Hinrich'sche Buchhandlung. 1891. In *Texte und Untersuchungen*, VII, 2.

spurious as they do not appear in the Ottabian codex. Obviously (Professor Harnack argues) later interpolators or copyists took offense at the expression "bread and water" and deemed it necessary to add the word "wine" or "mixture" (οἶνος or κρᾶμα). Professor Harnack concludes (p. 131).

"Justin describes the Christian worship as using in the Lord's Supper bread and water not bread and wine. His disciple Tabian accordingly did not introduce an innovation. And a few comments are needed to set forth the importance that Justin who was at home in Ephesus and Rome, and in fact in all Christendom, and who describes the worship of the Roman Church, makes no mention of the wine, and describes the ceremony as being of bread and water."

Harnack sums up his conclusion in these sentences:

"The institution of the Lord was originally understood in a sense which makes the blessing attach, not to bread and wine, but to eating and drinking. Bread and wine is a very simple meal, but bread and water is simpler still. The elements of the Lord's Supper, accordingly are bread and the cup.

"Paul says" καλὸν τὸ μὴ φαγεῖν κρέα μηδὲ πεῖν οἶνον (i. e., it is good not to eat meat nor to drink wine), but it is a mean subterfuge to say that here the wine of the Lord's Supper must be excepted. . . If Paul praises abstinence from wine, he includes abstinence from wine at the Lord's Supper, and thus he declares that the cup of water is sufficient.

"The Lord's Supper in the circle of the first disciples was a daily and a real meal (Didache 10 uses the term ἐμπλησθῆναι, i. e., to eat one's fill), and probably bread and wine were used. But from the beginning the breaking and eating of the bread was the essential part, for it was a meal that was being celebrated. At the meal a drink was taken, and that was drank as the blood of Christ. This was (especially among the poor) sometimes water. Of the Ebionites of Palestine we know that they took bread and water as their sacrament and in addition to their lack of wine there was another reason. Even in the apostolic age there were some who made of wine drinking a matter of conscience, and Paul requested Christians to be lenient with such narrow consciences.

"Thus the custom of taking the Lord's Supper under the form of bread and water, as a real meal, increased from 64–150 A. D.; and became so well established that Justin in his description of the Lord's Supper makes no mention of wine at all.

"It is only the Apostolic Catholic Church which introduced the wine as the sole element of the institution; and in this case she was at least in formal agreement with Christ's inauguration."

Harnack adds:

"The Church had a right definitely to prescribe in times which no longer could brook liberty, the elements of the first Lord's Supper, especially when there

was a demand for water and when a motley variety of foods began to endanger the dignity of the ceremony. But this advance had its serious drawback for as soon as the elements were determined the superstition became unavoidable that the power of the sacraments was inherent in its elements."

We have quoted Professor Harnack extensively because of the importance of the results of his investigations, and we need not here quarrel with him about principles. He seems to think that in the first century the early Christians were entitled to have liberty, but later on the Church had a right to suppress the consciences because later ages could no longer brook liberty. Uniformity which was needed for the centralisation of the power of the Church became more essential than personal convictions. If in Paul's time the Christians were free to take either wine or water, why should we of the nineteenth century not have the same right. Some Chinese converts who hold the alcoholic drinks of the west in abomination use tea, but their practice is denounced as utterly un-Christian by the Episcopalians.[1]

My friend, Dr. G., a member of the Church of England and a

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[1] See, for instance, the missionary report in the little monthly *The Church in China*, Vol. IV., No. 12, pp. 149–150: "The *Angelus*, the parish paper of the "Church of the Ascension in Chicago, published to the world that here was some-"thing very wrong indeed in China; the missionaries were using tea instead of "wine in Holy Communion. Next, a professor of one of our theological seminaries "wrote to the *Living Church* and restated the charge, and demanded 'the utmost "publicity.' Two good friends of the Mission were prompt in denying the charge, "but meanwhile the mischief is done. People who will never see the denial will "hereafter refuse to contribute to the Mission on the ground that we are not to be "trusted. One priest has even gone so far as to write that 'many may feel called "upon to abjure the Communion of a Church where such things are allowed,' "and quite a little excitement seems to have been caused in many quarters. Now "we do not wish to make light of such a charge if it were true. To substitute any-"thing whatever for the wine in the Sacrament would be to break with all Church "tradition, to meddle presumptuously with the institution of our Lord, and thus "to commit sacrilege. (!) If a priest or bishop were found to have done so he ought "to be tried and deposed.

"But it is just because the offence is so grave that we ask our critics how they "could find it in their hearts to impute it to the Bishops and clergy of the China "Mission. On the one side is all Church law and custom and the character of the "men who are sent out from home to do a difficult work. On the other, an am-"biguous sentence in a letter of one man new to the work. Do not make our task "harder by foolish criticism or harsh charges. Be a little just, and generous, and "charitable."

vigorous anti-teetotaler, endorses these sentiments and declares that wine is under all circumstances the better drink.

Harnack seems to assume that Jesus instituted the Lord's Supper personally, but a close inspection of the Gospel reports will show that such is not the case.

In spite of Paul's and Justin's definite statements, that Jesus instituted the Lord's Supper on the night in which he was betrayed, Christian theologians have been forced to the conclusion that the event is not historical but the product of an interpretation of the Lord's Supper as an ancient Church institution which was commonly supposed to be founded by Jesus himself.

Paul's view of the Sacrament may have given the first stimulus to celebrate it in commemoration of his death, and is at any rate the oldest statement that is historically unobjectionable. The reports of the three Gospels are of a later date and may very well directly or indirectly be dependent on Paul. The strangest thing is that the Fourth Gospel (which is named after St. John) does not contain the least reference to the institution of the Eucharist; and yet the author of this Gospel, whose conception of Christ as the bread of life brings him into sympathy with the fundamental idea of the Lord's Supper, would have made him hail the idea of the Eucharist in which Christ symbolically gives himself up as food to those who are his own.

One of the most important differences between the three Synoptic Gospels and the Fourth Gospel consists in this, that Christ was crucified according to the former on a Saturday, according to the latter on a Friday; but a critical-textual investigation proves that the original reports agreed better than the versions which we now possess.

The high-priest and his councilors, according to Mark, are in a hurry to have Jesus executed before the Passover Feast, and then we read that Jesus celebrated the Passover with his disciples, and the account of it is so explicit as to leave no doubt. The contradiction finds its explanation in the idea which prevailed among the early Christians that the Sacrament was the Jewish passover or pascal, and Christ, the pascal lamb of the new Cove-

nant, should have instituted the Lord's Supper on the Feast of Passover. This thought pervades some passages which bear the characteristic marks of interpolations; and he who tampered with the text forgot to change the other passages according to which Jesus must have been crucified before the feast. The addition made to the text includes the celebration of the Last Supper, and the fact that we have to deal here with an interpolation must naturally discredit the three reports which in this very place have obviously been tampered with. If the institution of the Lord's Supper had been a part of the original Gospel of Mark or of any genuine apostolic memoir, the author of the Gospel according to St. John, who knew and used these oldest Gospels, would not have forgotten to incorporate it in his book.

Spitta, though recognising the great importance of Harnack's essay, criticises him for reconstructing the Last Supper from post-apostolic traditions and rejects the idea of its being instituted by Jesus at his last supper, saying:

"Of an institution (of the Lord's Supper) by Christ on the last day of his life, there is not the slightest trace in the oldest tradition." (P. 332.)

Spitta[1] proposes for practical Church use the interpretation of the Lord's Supper in the sense of Christ's word, ἐγώ εἰμι ὁ ἄρτος τῆς ζωῆς,—I am the bread of life,—and would thus replace the gloomy and funereal mode of its celebration by a more elevating conception, not as a *mysterium tremendum*, but as a feast of joy and gratitude. And this conclusion is forced on him—a man of decidedly conservative, if not orthodox, tendencies—against his previous conviction upon purely historical evidence and the internal evidence of the text.

We cannot enter into further details and refer the reader to Professor Spitta's thoughtful article on the subject, which is the work of an orthodox Christian, i. e., of an ardent believer, a theological professor of the University of Strassburg, who takes a very active part in practical Church work. His present view has been

[1] *Zur Geschichte und Literatur des Urchristenthums*, p. 208.

forced on him by the overwhelming evidence of facts. He says of his own views:

"The following essay contains a severe self-criticism. What I offer is nothing else than the result of that which the power of historical tradition as well as I understand it has forced upon me."

In addition to historical reasons, which render the view that the Lord's Supper was instituted by Jesus impossible, there are other arguments which should not be underrated. The Christians of to-day are accustomed to the words, "This is my body," and "This is my blood"; but to the Apostles these terms were strange. Nor did Jesus prepare them otherwise than by the prophecy of his death. This, however, aggravates the situation and renders the words the more offensive, ghastly, and abhorrent.

Consider only the situation: The revered Master takes leave, because he must die, and he declares in the last meal that the bread which he breaks and offers to his disciples is his body, his very flesh, and the wine his blood. The impossibility of such a declaration at such a moment is obvious! The very idea of identifying the bread with the Lord's flesh that will be broken on the cross, would under these circumstances have been so uncanny as to make his disciples unable to swallow the least morsel of it. The audience of Jesus did not consist of cannibals of ancient Egypt or darkest Africa, but of Jews. The wine as blood, not for sprinkling but for drinking, would have become disgusting to Israelites who through the Mosaic law had become accustomed to regard the drinking of blood as a most sinful defilement.

THE INFLUENCE OF ST. PAUL'S CONCEPTION.

If the Gospel report of the institution of the Lord's Supper must be ruled out of court, we find ourselves at last face to face with the statement of St. Paul that he received it "as a word of the Lord." His is the only testimony the historical genuineness of which cannot be doubted. But even if we suppose that Paul had actually received the institution of the Lord's Supper by a vision-like communication, we cannot help thinking that the conception of his intuition must have come to him from somewhere.

Owing to the authority which Paul possessed, his mode of celebrating the Eucharist must have at once been widely introduced among the Gentile Christians, and must have done much toward determining the spirit, and perhaps even the form, in which it was celebrated.

St. Paul is a thinker of great depth, but he is neither an historian nor a critic; he is a theologian who takes convictions which are to him of fundamental importance as revelations and proclaims them as words of the Lord. How little he cares for historical information concerning Jesus appears from the fact that he intentionally avoided the Apostles for a long time, and goes so far as to boast:

"I certify you, brethren, that the gospel which was preached of me is not after man."

Only when his views had been definitely settled, Paul sought the Apostles for their indorsement of his doctrines. Peter and Paul did not agree, but Peter suffered Paul so long as he confined himself to the Gentiles and promised to remember the poor.

The way in which Paul proclaims his conviction as a word of the Lord is very impressive, but we must consider that on other occasions he is very unfortunate with his statements. An essential part of St. Paul's Christianity was the doctrine of the day of the Lord as being near at hand; and the faithful believers expected to be literally taken up to the heavens at the advent of Christ. Their faith began to be shaken when several of them died before the fulfilment of their hopes and to comfort the survivors St. Paul pronounces the prophecy:

"For this we say unto you by the word of the Lord, that we which are alive and remain unto the coming of the Lord shall not prevent them which are asleep.

"For the Lord himself shall descend from heaven with a shout, with the voice of the archangel, and with the trump of God: and the dead in Christ shall rise first.

"Then we which are alive and remain shall be caught up together with them in the clouds to meet the Lord in the air: and so shall we ever be with the Lord.

"Wherefore comfort one another with these words."

No quibbling can set this prophecy in a light which could interpret away its non-fulfilment, or soften the crudity of his escha-

tology. And this promise St. Paul made to his followers as a word of the Lord!

St. Paul is a peculiar mixture of clear thought and mysticism. He is clear in his arguments and explicit in his statements, and those convictions which he holds for reasons unknown to himself appear to him as direct communications of a higher source.

The psychology of St. Paul is not an exception but the rule. Convictions which rest on sentiments are commonly regarded as divine, and any literature which is a direct outpouring of the heart, be it poetical or religious, is considered as inspired. Thus when Paul makes a certain statement as a word of the Lord, we must assume that the source of his conviction is an inner voice which wells up, in the same manner as does conscience, out of the depths of his unconscious soul-life.

We have explained in another article that Gnosticism (using here the term in its broadest significance) was a religious movement antedating Christianity and that Paul was thoroughly imbued with its spirit. He employs the gnostic terms not as denoting new ideas but as referring to well known notions. His education was Jewish of the most orthodox school, but it was modified by the spirit of his surroundings which as we know were saturated with Greek thoughts such as prevailed in those days in Asia Minor; and Asia Minor was a hotbed of Gnosticism.

By Gnosticism in its broadest sense we do not understand any one of its special systems, be it the system of the Ophites or any other Gnostic sect, but the whole fermentation which through the mingling of the nations and the mutual exchange of thought began to agitate the religious world from the days of Alexander the Great. It is not the place here to analyse the problems which were raised in those days and to assign them to their various sources, India, Persia, Egypt and also to the ancient traditions of Babylon, Assyria, and Accad. Suffice it here to state that new ideas concerning the nature of the soul, its relation to God, and its destiny after death were discussed and many wild theories as to the origin of the world and the end of all things with a subsequent renewal were widely entertained by many people. A saviour was expected, not by the Jews alone,

but by almost all the nations, especially by the Persians. Paul had unconsciously imbibed all these notions. How could he, growing up as he did in Tarsus, help it? You might as well educate a German boy in America, and expect him to remain ignorant of the American spirit and the notions of progress and liberty with which the atmosphere of the United States is saturated. Thus we may fairly assume that Paul cherished a great number of thoughts of which he could give no account to himself because he had imbibed them in his early childhood.

Have we perhaps to deal with such a notion in Paul's doctrine of the Sacrament?

The question is difficult to decide, but there is one thing of which we may be sure, viz., that similar ideas were prevalent among various religious sects, among which the Mithras worshippers perhaps come most closely to Paul's conception of the sacrament. The Myazda offering was frequently celebrated in commemoration of the dead and taken as food of life which would assure its participants of their resurrection at the great day of judgment. When Mazdaism spread, Mithras worship became more and more prominent, and we may assume that it incorporated many religious notions of the less civilised people who adopted its faith. Was it not natural that the idea of the power of atonement inherent in the blood of sacrifices should be connected with the Myazda offerings? Such notions prevailed among all the races of Asia and Africa as well as among the Gauls and Thracians and had entered into the sphere of Greek thought through the Dionysian and other mysteries. The monuments of the Mithras mysteries which are frequently found in the northern Roman border-provinces along the Rhine and the Danube can be adduced as unequivocal evidence of the rôle which the idea of blood as the sacred liquid of salvation played in the Mithraistic eucharist.

Blood covenants are an established institution among all the pre-Christian religions of the earth, and the idea of their sacredness was deeply rooted in the hearts of the people.[1] Blood cove-

[1] See *The Blood Covenant, a Primitive Rite and Its Bearings on Scripture*, by H. Clay Trumbull, D. D. London, George Redway, 1887.

nants are survivals of barbarism, but to Jews and Christians both the idea itself and the term were sanctified through scriptural use. For we read in Exodus xxiv. 8:

"And Moses took the blood, and sprinkled it on the people, and said, Behold the blood of the covenant, which the Lord hath made with you concerning all these words."

It is but natural that the idea of the blood covenant formed an ingredient of the gnostic fermentation of thought; and it seems that the hoary traditions of human sacrifices, as well as the vicarious death and resurrection of a Dionysus, an Adonis, a Thammuz were connected with the practice of blood covenants. The principle of vicarious atonement is the underlying theory of all sacrifice as instanced in the practice of the Mosaic law of transferring the sins of the people upon the goat offered on the altar.

A new conception of the idea of sacrifices were in the air and cannot have remained unknown to Paul. When his whole life was suddenly changed through the vision on the road to Damascus, he saw the world in a new light, and his gnostic notions began to receive a satisfactory interpretation. They must have remained an unintelligible portion of his soul, which may have collided now and then with the system of his pharisaic schooling. But when he conceived the idea of the Messiah as having appeared in the flesh and having died in contumely and as being resurrected in glory, the two currents of his thought were reconciled, and the dim traditions of ruder ages, the mysterious notions of unknown sources, appeared now as prophecies that had found their fulfilment. Paul must have felt the more sure of having the right solution as the most ancient, the most venerable, the most reliable, though at the same time the most bloody and cruel and desperate methods of salvation were thus justified in principle, while the rites themselves which (perhaps not without serious misgivings among a large portion of the most earnest religious minds) had become antiquated, could now at last be regarded as fulfilled in, and finally abolished by, the death of Jesus.

Considering the religious disposition of mankind, the belief in the atonement through the blood of Jesus was a doctrine that could

set to rest the minds of the people and serve as a transition to a nobler conception of religion. It developed spontaneously, being a natural product of the age, and if Paul had not proclaimed it, some one else might have uttered a similar thought. It was a matter of historical necessity that he who formulated it should become the religious leader of the age.

If in the progress of civilisation the development of thought rises to a higher plane it will discard the lower religions that prevail at that age, for a higher religion; but let us not forget that this higher religion, in order to be acceptable to the people should not only be better, purer, and truer, but must also come as a fulfilment of the older faith. The Christianity of Christ came as a fulfilment of the Old Testament, and the Gentile Christianity of the Roman Church, in order to be acceptable to the Pagans, could not help being a fulfilment of ancient Pagan rituals and beliefs. From the Protestant standpoint the development of the Christian Church during its Romanisation appears as a falling from grace and a lamentable lapse into Paganism, but from the standpoint of a calm historian who is not swayed by sentiment and endeavors to understand historical events, this period appears as the unavoidable result of given conditions. It was a necessary period in the evolution of religious thought and could not have been otherwise.

The task of preparing the movement fell to the part of a Hellenised Jew, which is not an accident but a matter of course. The apostle of the new covenant might as well have come from Egypt as from Asia Minor. Philo, if he had lived a decade later, might have done the work as well; but at any rate, it was essential that it should be a Jew born and raised in a centre of the intellectual life of orientalised Hellenism, so as to unite in himself all the premises of the religious problem of the age. Judaism alone could become the centre of the new faith that was to be the result of the Gnostic fermentations, because the Jews were a nation in possession of an accessible religious literature chastened in the furnace of a pure and almost Puritanic monotheism. Judaism alone could furnish the backbone of the new faith. Neither the Egyptian Thoth, nor any of the Greek saviours, Dionysus, Hermes, Hercu-

les, etc., nor the philosopher among healers, Apollonius of Tyana, nor even Mithras, had any chance in this competition for the place of honor, with the Jew Jesus, the simple-minded Nazaree, whose Messianic mission became sanctified by his death on the cross, for thus the new religion was set in relation to the ancient traditions of atonement by blood in a real human sacrifice. The Gospel of the Crucified was a fulfilment of the old beliefs as awful and soul-stirring as the cruelest of them, yet implying a radical abolition of the barbarism of bloody sacrifices.

EDITOR.

DUALISM MODERNISED.

DUALISM is the earliest metaphysic. In tribal society it is the universal belief, and even in modern society the mass of mankind adhere to it. A system of dualism had not been formulated to harmonise with the new concepts of science, although it is assumed by a multitude of writers, until Professor Ladd as a physiologist, especially of the nervous system, now presents a theory purporting to be derived from the teachings of modern psychophysiology.

Ancient philosophy inherited a doctrine of ghosts from barbarism. This doctrine science has called animism. In this notion of the constitution of the world all bodies are divided into two classes, material bodies and ghostly bodies. It is supposed that the two classes have independent existence. Material bodies have a distinctly observable existence: they can be tasted, they can be touched, they can be felt as pressures, they can be distinctly heard—that is, they can be plainly revealed to the senses, but they are inert and unconscious. On the other hand ghostly bodies have mysterious existences. Ordinarily they cannot be tasted, touched, heard, and seen, but there is a peculiar class of people who under peculiar conditions may have communication with them, and ghosts are living, conscious bodies. They are supposed to live in a hazy or cloudy condition and are hence often called spectres. These spectral bodies can become domiciled in material bodies. In sleep they go forth from their homes and live a magical existence, travelling as thought wanders from object to object and from place to place. As material bodies are inert the life of material bodies be-

longs to their ghostly inhabitants. As material bodies have not mind, only their ghostly inhabitants are possessed of mind. The manifestation of life and mind which seems to inhere in some material bodies, is, in fact, to be attributed to the ghostly inhabitants. The class of persons to whose senses ghosts are revealed can communicate with them and learn about the mystery of the world, and the ghosts of these persons may even leave their own bodies and travel at will. How this doctrine originated has become an object of scientific research, and it is already explained. This is the original theory of dualism which has been modified in modern times.

The modern doctrine of dualism makes a radical and in many respects a just distinction between animate and inanimate nature; only animate bodies have ghosts. Sometimes a distinction is made between human bodies and other animal bodies, and only human bodies are believed to have ghosts; though it is not common to distinguish between the lower animals and man in this manner. Usually the distinction is covered up in a haze of speculation, or else it is wholly ignored.

Thus, Ladd in his new theory of evolution distinguishes between things and selves; but it is not clear whether by selves he means human beings only or all animate beings.

A few years ago a society was organised, known as the Society for Psychical Research, the purpose of which seems to be to investigate the subject of ghosts. The outcome of these "researches" seems to be the abandonment of the ghost theory and the substitution of a physical theory of telepathy, by which men are supposed to communicate with one another without contact direct or through a medium; especially is it desired to establish the doctrine that dying persons may communicate with distant friends and relatives. So the ghost theory vanishes in telepathy! On the other hand scientific investigation, especially in psycho-physiology, is active and searching; and scientific men are reaching the conclusion that all matter has the property of consciousness.

That affinity is choice has long been taught in chemistry, although it has been controverted or rather ignored by many chemists. Where there is choice there must be consciousness as its

foundation; the choice is relative to some other with which the choice of association is made, and the choice of association must have its foundation or absolute in consciousness. This is the legitimate outcome of the last twenty years of research.

That affinity is conscious choice is now more thoroughly established than ever before. Ladd himself, the latest scholar to propound a system of dualistic theory, or doctrine of ghosts, seems to adopt this conclusion. A decade ago it was announced in a very thoughtful and able work by Professor Johnson of the Harvard school of Theology. The doctrine is springing up on every hand among scholars in psychology and physiology.

This doctrine must not be interpreted to mean that all rocks and plants are animals, but only that there exists in rocks and plants something which when properly organised for the purpose appears in animate bodies. There is a something in all matter which, when duly organised, will exhibit those characteristics of animals which we call mind.

In the history of ancient philosophy there may be found vestiges of a notion which has come to be known as hylozoism. It is the doctrine that all matter has mind. It seems to have been entertained by some men for more than twenty centuries, but it has never been accepted as having a scientific foundation. The distinction between the animate and the inanimate seems to be too plainly made in nature to warrant its general acceptance. Still in some qualified way it has been revived and restated from time to time by a few of the greatest scientific men and by a few of the greatest philosophers.

Professor Ladd adopts the hylozoistic theory, but rejects the term matter and proposes to use the term nature. By this course he avoids the *odium theologicum* under which the term materialism has fallen, though he seems still to retain the dualistic theory of material bodies and ghosts. I say seems, although in fact he makes a strong and valid argument for the unification of spirit with the other properties of matter in every body and particle of the universe. Hylozoism has been rejected by science, and can no longer be entertained in the sense in which it has been held from ancient

times up to modern physiologic and psychologic science. Hylozoism, as the name implies, is a theory that all bodies are animals. This of course is absurd. But it remains to be considered whether all bodies are spiritual or not. In this form modern science is coming to recognise that all matter is spiritual. Science has from time to time affirmed that all matter contains all of the properties necessary to explain the existence of all of the bodies of the universe, and even those metaphysicians who have devoted especial attention to the sciences which are embraced under the general term natural history have sometimes affirmed the same doctrine—as when Schelling says that "Matter is the general seed corn of the universe, wherein everything is involved that is brought forth in subsequent evolution." This is the doctrine of science, as Ladd recognises, for he quotes from Tyndall with approval:

> "Suppose, then, that the student of nature, 'abandoning all disguise' and 'prolonging the vision backward across the boundary of experimental evidence,' discerns in 'that matter which we, in our ignorance and notwithstanding our professed reverence for its creator, have hitherto covered with opprobrium, the promise and potency of every form and quality of life.' . . . 'If life and thought be the very flower of matter and force, any definition which omits life and thought must be inadequate, if not untrue.'"

Bear with me while I still further explain the relation of affinity as consciousness and choice to organised mind. Organisation is the same thing as incorporation. We speak of organisation when we consider the organs severally, we speak of incorporation when we speak of the organs conjointly, just as we speak of space when we consider particles severally and of form when we speak of particles conjointly. Molecules are organised as numbers; minerals composed of molecules are also organised as forms. Geological formations or rocks which are organised as forms are also organised as forces. Plants which are organised as forces are also organised as causes, so that the antecedent parent is like the consequent offspring. Animals, being organised as causes like plants, are also organised as minds. Thus animals are organised not only as molecules but as minerals, as formations, as forces and as plants, and also as psychic beings. These are the discrete degrees of organi-

sation which may be observed in the bodies of nature. We cannot understand science unless we understand that there are degrees of organisation. I reject hylozoism because I deny that molecules, minerals, formations, and plants are organised as animals, and yet I believe that every particle in the animal's body has unity, extension, speed, persistence, and consciousness; and as particles have these absolutes, they also have their relatives.

Every organised body of the universe is one in many: it has extension and position, it has speed and path, it has persistence and change, and it has consciousness and choice; for plurality is the relative of unity, position is the relative of extension, path is the relative of speed, change is the relative of persistence, and finally choice is the relative of consciousness. Animal body is distinguished from all other bodies in that it is organised upon a plan through which all of its properties are operated. I do not confound animals with other bodies; this is hylozoism. I recognise the distinction between animals and other bodies, but I do not deny that the particles of other bodies have all the essentials found in animals.

All bodies are organised in respect to purposes, but some operate in a different manner from others. In some the purposes are more restricted than in others. Molecules are restricted in their organisation to operate as kinds; minerals are restricted in their organisation to operate as kinds and forms; formations are restricted in their organisation to operate as kinds, forms and forces; plants are restricted in organisation to operate as kinds, forms, forces, and causations; but animals are organised to operate as kinds, forms, forces, causes, and also as concepts. The restriction of an organisation to one function is easily understood. We may organise a society for mutual discussion, then we may further organise for research in the subject which we discuss, then we may still further organise it for the purpose of diffusing the results of the research.

In all animal bodies there is a five-fold organisation which is well developed and exhibited in the human body. First, there is metabolic organisation for the chemical preparation of the food.

This organisation is in itself a system of many organs. Every member of this system is composed of subordinate organs that perform all of the five-fold functions. The stomach, one of the organs of metabolism, is permeated with organs of circulation; it is supplied with organs of muscular activity; it is supplied with organs of reproduction, for the stomach is forever in process of reproduction. It is also supplied with organs of mind, for it is bountifully furnished with nervous elements.

The five-fold organs of metabolism, of circulation, of muscular action, of reproduction, and of nervous function, are also every one compound organs for all of the five properties with which matter is endowed. It is because of this complete organisation that animals differ from all other bodies of the universe. Plants have organs for chemical operations, organs for form operations, organs for force operations, and organs for operations of causation, or as we call them, for reproduction; but they have no organs of mind: hence the discrete degree of organisation which separates animals from plants. Yet the ultimate particles of the plants have all the essentials.

Geologic formations or rocks have organs of chemism, for they are composed of molecules. They have organs of form, for they are composed of minerals. They are organs of force, because they carry on geologic operations; but they have no organs for reproducing themselves, so that causations are not organised to produce hereditary successions as in plants; and yet every particle of rock has all of the five essentials of matter, as unity, extension, speed, persistence, and consciousness. All rock bodies are organised in three discrete degrees, all plants in four discrete degrees, and all animals in five discrete degrees. Thus the doctrine of hylozoism is not valid, but the doctrine of the consciousness of all matter is valid. The same particle of matter which is the constituent of a rock to-day may be a constituent of a plant to-morrow, or it may be the constituent of an animal the next day. The five-fold essentials of matter are universal, but the five-fold organisation of matter is not universal.

Dualism is the modern and metaphysical explanation of the

ghost theory in which the spiritual element of animal bodies, or at least of human bodies, is held to exist as an independent body. It therefore teaches that there are material bodies and ghostly bodies. Modern science teaches that the spiritual element in man as in all other animal bodies is an essential of all bodies, but that it is organised only in the animal body, and is immeasurably more highly organised in the human body than in the lower animal. It teaches that mind is organised consciousness, and until this organisation is secured there is no mind, but only consciousness. The ghost theory is a superstition which remains over from savagery as a vestigeal opinion.

A great difference between the author and modern dualists consists in the method of identifying the psychic principle with something already well known to science. Professor Ladd, for instance, who is as good an exponent of dualism as any one of them, identifies the soul with will and ultimately with force; we identify it with self-consciousness (as awareness of self) and with choice, and consider it to be the same thing as that of which science treats under the term affinity when consciousness acts in choice.

Read in modern physiology the account which science gives of the unicellular organisms of the blood, and you will find that the functions of these organisms cannot be described without assuming that they have consciousness and choice.

The new dualism, like its progenitor, animism, lays great stress upon the telism of nature, which is the manifestation of design in the universe. This telism is assumed, illustrated, and proved by the modern science of evolution; but the telism of dualism is metaphysical, while the telism of science is altogether another affair.

Evolution cannot be stated except in terms of telism. Evolution must recognise organisation, and all organisation accomplishes a purpose. Scientific men are forever explaining how purposes are subserved by organisation. No matter what the philosophy or the metaphysic of a naturalist may be, whenever he comes to discuss an organ he explains the purpose for which it is used, the advantage which accrues from its use, and its survival by reason of this advantage. Purpose is discovered everywhere in nature, but

especially in plants and animals does it constitute the theme of all modern science on these subjects. That the telism taught by modern science differs radically from the telism of metaphysic, we must now set forth.

A little river empties into Lake Michigan where now the city of Chicago stands; this river furnished a harbor for vessels to some of the pioneers of the west. The river was thus used by them for a purpose. On its bank a trader founded a mart. Thus the site of Chicago was established in a purpose which did not contemplate the building of the present city. The traffic gathered about it a few settlers who required protection, and a fort was built; yet there was no plan devised to build the great city.

At last the village grew to be a well-to-do town where goods were landed from vessels that sailed the lakes and sold and distributed to the south and west, far and wide, and the purposes of thousands of men were subserved in the building of the city. These purposes were innumerably multifarious, arising severally during every moment in the history of every man who took part in supplying the wants of the people, or who took part in receiving supplies for their wants.

The site of the town was a swamp, but when the people became numerous and much wealth was accumulated they raised the city out of the mud. None of the founders anticipated the necessity for this action; yet it was due to the purpose of the city government. Highways were built to the city and railroads were constructed from the city and when the people became many and were scattered over an expansive district rapid transit became necessary, and thus street railways were constructed, not to build the city but for gain in traffic. In the meantime parks were laid out and the city beautified; later an exposition was held, and the exposition gave a boom to real estate, though the purpose of the builders was gain. Then came a temporary crash in values, but still the city grew with renewed strength, and already a great metropolis has been constructed. All of this has been accomplished in the pursuit of human purpose, but the city was not the purpose of any one man but of millions of men, and it was a purpose that did not look

to the construction of the metropolis as it is to-day, nor do the striving millions in Chicago or the hundreds of millions who co-operate with them have in view the creation of the city which may stand there a hundred years from to-day.

Surely Chicago has been built by purposive action, notwithstanding it has been once largely destroyed by mechanical action. But who is so foolish as to claim that the purpose existed in the mind of the trader who built his cabin there, or in the minds of the people who have inhabited Chicago, or of the people who have co-operated with them from without? Chicago of to-day is the accomplishment of the purposes of many men. It is in this sense only that final purpose can be asserted of the building of Chicago. The working of the purpose of the many through innumerable or infinite acts brought the final result; in this sense and in this only can we speak of a final purpose in the world of art. But if we claim foreknowledge for this purpose every man who understands the claim will deny it.

All incorporation is thus purposive, and this I believe is taught by the modern science of evolution at the present time, though many of its cultivators have not risen to the concept; but that anywhere in nature there exists anybody or has existed anybody with the foreknowledge of the present outcome of evolution I deny. There is no molecule, there is no star, there is no rock, there is no plant, and there is no animal, which exists or which has existed with this knowledge.

There was never in the mind of any individual a design for the city of Chicago. There has never been an *a priori* plan for its construction, but its plan has been a growth by minute increment of purpose in the minds of a multitude of men, every one expressing a multitude of purposes by multitudinous acts of will. Purpose itself is subject to evolution.

We look upon the organisation of the human body as a result of teleologic cause, but do not believe that an *a priori* plan was made by which this incorporation was developed through mechanical external contrivances. We hold that the human body has been developed by increments of purpose inhering in every particle of

every human being that has existed on the earth, together with every particle of every lower animal that has existed on the earth, together with every particle of every rock that has existed on the earth, together with every particle of every star in the universe, together with every molecule that has existed in the universe, together with every particle of ether in the universe. All of these bodies and particles have co-operated in making the human body, and their co-operation has been accomplished through telic causation; but there has never been any natural particle or body as an individual to plan the entire structure of man, nor has there ever been an *a priori* plan for it in nature. The plan of his structure is known even yet imperfectly by *a posteriori* cognition. The purposive actions of all other particles of the universe have co-operated with all the purposive actions of the human race to produce the human body. In a plan for a work of art, as the building of a steam engine, the construction of a railway, or the building of a city, we see much of *a priori* design, together with more of incremental purpose. In the structure of the human body we find little or nothing of *a priori* design but much of incremental purpose; while in the plant and in the crystal only incremental purpose can be discovered. The reason for this is found in the fact that self-consciousness and choice are but affinity, that they still inhere only in the particles constituting the bodies, because there is yet no organisation of mind. Mind must have organs of thought that design for the future may be planned; and that designs may be made, there must be memory of the past. When we consider the past and compare it with the present, then only can we make designs for the future. All of this mental activity is not found in other bodies than those of animate life. Animal bodies have mind, other bodies do not have mind, but other bodies do have self-consciousness and choice. A belief that inanimate bodies have mind is the real hylozoism, and that form of anthropomorphism science repudiates.

It is perhaps impossible to discover whether Ladd embraces a teleology which is a growth by minute increments without an *a priori* plan of the final results, or a teleology which assumes an *a priori*

design. A later chapter implies that he believes in this metaphysical teleology.

Professor Ladd discusses spheres of reality. Perchance I do not understand the meaning of his argument, though I have tried hard to unlock its treasure-vault of thought; reading it again and again for this purpose. What does he mean by spheres of reality? When metaphysical speculation was born, men spoke of spheres of space, because they believed the earth to be encompassed by hollow revolving spheres in which the heavenly bodies were supposed to be set; they thus accounted for the apparent motion of the celestial orbs. What is the thought which the author symbolises by this figure of speech? At first blush I thought that he designs to set forth the distinction between the teleology of affinity, the teleology of animality, and the teleology of man; but ere the chapter was completely read I found, or supposed I found, that the purpose of the chapter is to develop the concept of an animate universe as an individual existence.

He represents the cosmos as a human being of all-embracing proportions. We must remember here that it is his habit to call human beings selves, though sometimes he seems to call all animate beings selves. I believe that I have rightly interpreted the teachings of this chapter as an effort to develop the concept of a cosmical self, but the course of the argument is strangely metaphysical as I use that term. In what way it is metaphysical I may not take the time of my reader to explain fully, but I will give some of the characteristics of this method of dialectic, or reasoning with words instead of ideas. He uses the term absolute self, meaning thereby a cosmical human being, and then raises the question whether the noun and the adjective can be taken together, that is, whether the meaning of the adjective does not contradict the meaning of the noun.

The term absolute in metaphysical dialectics is used with three very distinct meanings:

First, it has the meaning of perfect or pure, as when we say perfect or absolute alcohol. We might thus call pure wine absolute wine, and it is common to say that pure truth is absolute truth.

The second meaning inheres in its use when affirming that something is absolute in itself, which is also relative to others. In H_2O the H_2 is absolute in itself and the O is absolute in itself, but in the molecule of water represented by them both there is a relation between H_2 and O. Thus in the water H_2 and O are both absolute and relative. Science in all its departments deals with this absolute.

Metaphysic has a third absolute. When properties or qualities are considered as independent existences or when relations are supposed to exist independent of their terms, and a mythology is created of abstractions, then the notion of a pure or unrelated absolute is entertained. This is the absolute in the exclusive possession of metaphysic.

Thus metaphysic entertains three meanings for the term absolute and confounds them as one. In a metaphysical argument it is always impossible to determine with which meaning the term is used.

Then he uses the term consciousness with two meanings combined. Consciousness means self-consciousness, or awareness of self; but the term has also come to be used in metaphysic as synonymous with cognition. There is always an element of self-consciousness, or awareness of self, in every act of cognition, because cognition is the interpretation of an objective manifestation received in a sense-impression by comparing it with a concept already existing in the mind. This is an inference, but the inference requires verification in order to be a true cognition.

Again, as I have already stated, our author often uses the term form to represent a space concept, as to express the relation of positions of extension in structure which also have figure or shape. He also uses the term form as a trope without realising that it is a trope. He speaks of the forms of motion and the forms of force and the forms of judgment and the forms of concepts and the forms of thought, although such forms cannot exist with the first meaning. He uses form in a generic sense as a trope to signify all of the properties of bodies, and in this sense he speaks of forms, laws, and purposes again and again.

The habit of figurative naming is common. Thus we call an old man grey-beard, and the Greeks called a squirrel a shade-tail. Such trope naming is common in all languages, and our author recognises this, but does not consistently make the discrimination in his use of words. In reasoning we should use terms with single meanings; the word should stand for one differentiated concept, and a concept should represent a real thing in nature or art.

This misuse of terms has long been recognised in logic, but never consistently avoided. It was followed in the logic of mathematics, until mathematicians came to speculate about space of n dimensions; for although equations involving n powers are legitimate, when we consider such terms as if they were dimensional terms of space we are indulging in metaphysic. He who reasons in terms with more than one meaning is lost in a maze of fallacies. This confusion is the characteristic of dialectic reasoning, or reasoning with words as distinct from reasoning with concepts, which considers a word in all its meanings as if these meanings were combined in one concept.

But may we not look upon the universe as being endowed with consciousness and choice? Is it not an individual; and is there not a possibility of its being mind?

It is a doctrine established by science that the world is one composed of many, that its extensions have structural positions, that its motions have systematic relations, that its times have causational relations, that its judgments have conceptual relations, and that it is thus an individual. That this individual, the cosmos, has such an individuality as to comprehend both the past and the future and to devise the whole course of evolution as an *a priori* plan, is a result only of metaphysical speculation, and science claims no share in the product.

Dualism like idealism and materialism rests on metaphysic. Metaphysic is a system of reifying properties. Idealism reifies mind and derives the other properties of matter from mind.

Materialism reifies force and derives the other properties of matter from force. Dualism, idealism and materialism are the three main systems of metaphysic, and they are blended in what I

propose to call modern dualism. Modern dualism supposes mind to be will, identifies will with force, and then reifies will as the substrate to which the other properties of matter are attached. It is an attempt to harmonize idealism with materialism; in so doing the new doctrine accepts the fallacies of both.

This tendency is apparent in all modern dualists, and we find it very pronounced in Professor Ladd. But in identifying force with will and making it the substrate of the world, Professor Ladd contradicts his own dictum that no category is completely dissolvable into any other.

The three systems of metaphysic alike invoke not only the unknown, but also the unknowable and the transcendental. They are forever in search of the occult. They do not make research for scientific reality, but make quest for some method of expressing reality as unknown, unknowable, and transcendental.

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EVOLUTION AND IMMORTALITY.

NO doctrine in a consistent theory of evolution[1] can be more important or more far-reaching in its consequences than the doctrine that life is never the peculiar endowment of certain separate individuals but is instead the affair of an indivisible universe. So conceived life necessarily includes intimately within itself—for otherwise the universe would be made divisible—all that is ever associated with human existence, it includes and unifies both the physical and the physiological, both the psychical and the spiritual parts of human nature, and being thus all-inclusive it frees the conception of immortality, which is our present interest, from any dependence on another nature than that about us, on separate unworldly souls or spirits. To comprehend it, however, and partic-

[1] The present paper is a sort of sequel to a paper: "Evolution Evolved—A Philosophical Criticism," published in *The Monist*, January, 1899, and like its predecessor it was also first read before the Catholepistemiad Club of the University of Michigan Faculty and the University of Michigan Philosophical Society. The two papers, moreover, I should like to have associated with the "Study of Immortality in Outline," published as an appendix to *Dynamic Idealism*, and with the *Philosophy of History*, which was issued last autumn, for in all of these investigations I have been trying to determine the precise relation of time to reality. In *Evolution Evolved* the attempt was to free evolution from certain encumbering inconsistencies that were clinging to it from the past, and my criticism was directed especially against an alien inorganic environment, an occultly endowed individual and a spontaneously generated life, referred to at the time as the three sides of an equilateral triangle. For evolution to retain any one of these veritable marks of creationism, even if it were retained in form or letter only, seemed to me to be a constant menace to consistency and the suggestion was made that in their place a consistent evolution should put an organic environment, an individual that lives not as an occult independent power but as an organic function or relation and a life that instead of being the peculiar sudden endowment of certain individuals more or less numerous, is the affair of an indivisible universe.

ularly to comprehend and appreciate the sort of immortality that it involves a careful and somewhat extended study has seemed necessary.

So I begin by saying that to make life the affair of an indivisible universe, that is, not only to deny individual independence or isolation to all living creatures but also to abandon such a classification of things in general as that of the animate and inanimate, is not by any means to ascribe life distributively to all things, including stones and clods. Some might hastily so conclude, but to such it need only be said that the term indivisible is to be taken seriously. *Nothing lives to itself alone but all things, "animate" or "inanimate," are the* VITAL *incidents of the life of the including whole.* This is undoubtedly a sweeping assertion, but it implies no new way of thinking, for what is here said of life in recognition of the first principles of evolution is being said also of other things. Physics is saying it of motion and force; psychology, of consciousness; and even ethics of will, and political theory of sovereignty. Force and consciousness and will and sovereignty are not the endowments of particular individuals, taken severally or taken in group, but are, all of them, affairs of an indivisible universe. No research of historical study can be more interesting or more illuminating than that which traces the sympathetic changes of view in the different fields of investigation. Thus, as of interest here, all along the lines of human inquiry, in the physical sciences and in the biological, in politics, in ethics, and in theology a divisible universe has been supplanted by an indivisible universe and an individual real through its own inner power by an individual real through its relationship. The atom in the sense of a material element is now but a word or at most only the symbol of what is recognised as imaginary or as only a logical disguise for reality, and souls—at least by the newer Christianity—are thought of no longer as so many immaterial entities but as the manifold yet never separate realities of a social, an organically social life. Citizenship, too, in the ideas of all, is coming to consist in function instead of in station, mere station alone constituting no social right. So is

individuality becoming transfigured; so is an indivisible whole claiming tribute from its parts.

But the technicalities of philosophy as so many rocks in our course are now close upon us. Technicalities, however, not less than rocks, are guides as well as dangers to progress. The two views, then, of individuality that have been touched upon, namely, the so-called pluralistic view which sees in individuals only so many separate independently existing entities, some of them material and some spiritual or immaterial, and the relationalistic view which indentifies individuals with the differences of an organic life, are dualistic and monistic respectively. Dualism is only an abstraction or generalisation of the total absence of relationship that pluralism finds among its self-existent occultly endowed individuals. The separation of the individuals is so complete, the isolation so absolute, that no antithesis less thorough-going than that between matter and mind, the material and the immaterial, the real of one kind and the real of an absolutely different kind, can adequately express it. And monism is only an abstraction for the premise of relationism—or organicism?—that the very differences of individuals are essential to unity. Under monism, since different individuals are still always related and related in their own right, in virtue of their very differences, not through anything above them or apart from them, separation or negation can never be taken as meaning existence apart and different in kind; it can mean only that things exist not more in and through themselves than in and through what is other than they. Dualism makes the "other" of things always alien to them; monism makes it natural and even immanent. By way of illustration do but consider how a monist must regard such opposites as the human and the animal or non-human, the organic and the inorganic, the spiritual and the material. For him in any one of these cases either factor must be, as it were, a witness to something actual in the other, perhaps an exposure of something hidden, say even a lost memory or an unheeded prophecy. Certainly nature, so often set in antithesis to man, is a curious union or meeting of man's past and future. The animal, for example, seems to some to be "lower" than the human, and not only that,

but also to be quite different in kind, but it is really a sign, a direct sign, a visible token, that the human quite within itself is not yet all that it can be, that there is something higher already within it; or at least monism cannot but think this. So in general to the monist the negation or opposite of anything is a witness to the inner positive possibility of what we commonly call growth. Monism may repel some, but in any case it is attractive for this: it sees the earnest of growth in all negation, the presence of realised opportunity in all opposition.

We have, then, another basis of distinction between dualism and monism. Dualism, knowing no differences except such as isolate, can explain change or growth only as a result of creation, as a sudden appearance; but monism, seeing unity or relationship even in differences, identifies change with evolution. Thus, under the first, nature or anything that changes is subject to outside control and so either through miracle or through chance is lawless, but under the second instead of being subject to anything supernatural or external, whatever changes is its own superior or its own subject and so always consistent.

And now, to turn back, a nature that changes arbitrarily, that is subject to something above and beyond, is of necessity manifold and broken, being made up spatially of unrelated parts or elements and temporally of unconnected stages and materially of independent properties and forces, but a nature that is her own superior cannot but be indivisible, which is to say organic, both spatially and temporally one and continuous. In short, then, to make a philosopher's sum of the foregoing, pluralism and dualism and creationism are logically inseparable, and so are relationism and monism and evolution. It is important to remember this for what follows.

With the dualistic conception of immortality everybody is quite familiar, and everybody knows that it goes with a pluralistic view of reality, whether material or spiritual, the physical world being reducible to absolute elements and the spiritual to certain immaterial entities, and with a creationalistic view of change. The plural in the sense of the divided and divisible—where the division

is physical or quantitative—is said to be mortal; it can and it often does disappear altogether; but the one, the indivisible, is immortal. Not that the immortal, which is also the immaterial, is not also plural, but its plurality is of a different kind; there are many immortal spirits, but—if I may borrow from the long ago—a wholly indefinite number of them can dance on the point of a needle. In short, then, for dualism mortality is sheer physical decomposition, and immortality, belonging to the physically indivisible, which cannot decompose, is literally another life, an after life, the life of a being that is different in kind from the being of space and time that lives here and now. As for the triumph over death which immortality implies, under dualism this can be only the extreme case, the abstract case of the lawless creative change that is always and everywhere taking place. Does some one interpose here and say that although a dualist, he has quite a different conception of immortality from what has been indicated? Probably he has, but it quite suffices to reply with a bit of the dogmatism of philosophy that a consistent dualist has no right to another conception and at least for the time being we are really courting consistency.

The monistic, which is also the relationalistic and evolutional theory of immortality, is the view, as already suggested, which frees immortality from any dependence on another nature than that about us, on separate unworldly souls or spirits, on spirits that may be in the world but are not of the world, and with this view the present paper is chiefly concerned. Although the general standpoint upon which it depends is by no means far from the consciousness of our day, we cannot be said to be familiar with it. Perhaps it is one of the things which we are more or less ignorantly worshipping and which we greatly need to have declared unto us. Certainly under all the circumstances we cannot penetrate too deeply into the meaning of evolution; as thinkers we have no greater responsibility than that of the evolution-hypothesis; and then in the pulpit and out of the pulpit it is the common saying that Christianity needs to be more intelligently conscious of itself,

and evolution may be, if it has not already been, the means to the needed awakening.

Monism, or evolution, finds in immortality, not an after life nor another life, but a fulfilling, wholly conserving continuance of the life that now possesses and encompasses us, asserting confidently that our immortality is, not is to be, and is in and of the very life we are here and now leading. In words that certainly are familiar: "Now is the accepted time; now is the day of salvation." And other words, other texts also suggest themselves: "The Kingdom of Heaven is at hand," and, "Lo, I am with you alway, even unto the end of the world." So, to say the least, Christianity can be interpreted monistically, and whatever the conventional consciousness of the day may be, it is at least questionable if a thoughtful student can arrive at any other interpretation. Moreover, without regard to any distinction between orthodoxy and liberalism, the pulpit everywhere is showing that it can be thoughtful as well as earnest.

Christianity, however, and its treasured message may be set aside for the present, and in order more fully and more clearly to comprehend the monistic and evolutional view of immortality we must examine it objectively, that is to say, so far as possible independently of any emotional associations, and we can do this most successfully by an inquiry into the nature of such relatively unemotional facts in our experience as space and time and matter. Space and time and matter are unemotional only because they are commonplace or universal, and yet the commonplace or universal is at the very heart and center of experience. Thus, these three unemotional facts are important to us because they are so intimately involved in the universe's indivisibility, in the organic individuality, that an indivisible universe implies and that evolution and its related standpoints have for their foundation, and inquiries about them, being obviously equivalent to inquiries about the meaning of the yonder and the hereafter and the other, are naturally only part of a general inquiry into the meaning of immortality. Our first task, then, is the examination of space, time, and matter, and only when this has been accomplished shall we consider the

emotional value, the direct meaning to man's life, to his history and to his hope, of whatever we find.

At this writing it is not my intention to enter upon an elaborate metaphysical study of space, time, and matter, but still without great metaphysical subtlety, I would explain their relation to reality, risking illustrations—which not infrequently obscure—whenever I can. So, for the present to waive any consideration of matter, the spatial and temporal is so commonly identified with the phenomenal, with the illusory or unreal, that to assert that space and time are intimate with reality, being veritable dimensions of reality, is probably to cause surprise, and yet to this view of their intimacy the thought of our day is surely committing itself. The spatial and temporal and the real are one. Every day we are getting farther and farther away from the mere antithesis of the spa tial and spaceless or omnipresent, and of the temporal and timeless or eternal, and from the peculiar uses in physics as well as in theology to which these have been more or less consciously put. As a matter of course, however, with this change of view space and time themselves have assumed a new character, for they have actually taken the omnipresence and the timelessness, that were supposed to belong to something outside, quite into themselves. Thus specific location in space or in time no longer means isolation; rather it is relation, and in its dependence on relationship it gives a genuine omnipresence to every single position of space and a genuine eternity to every single moment of time, binding the parts of both together in indissoluble wholes. I know that the majority of mankind is disposed to think that there are certain constants or fixtures underlying experience and that space and time are among them, but herein they are at least in danger of erring seriously, for the constancy of space and time is very easily misunderstood. The history of mathematics shows space passing from the static thing of the old-time geometry to the dynamic thing of the modern calculus, and time from mere passive duration to a positive condition of motion. Statically it would be absurd to find omnipresence in every location and eternity in every moment, but dynamically such a finding is unavoidable. In fact our ideas of space and time have

changed very much as those of political territory and history have changed. What statesman to-day thinks of territory as only so much domain? More than ever before territory is so much natural resource and it is accordingly inseparable from the very life and activity of the people, so that instead of being a cause of separation from others it is a means to active union and co-operation. And what statesman thinks of history as only so much that has happened or is happening? In political life more than ever before both the past and the future are recognised as actually living in the present, since the very law that explains the past is made the motive, is recognised as the moving idea of the present. Territory, then, and history in the thought of our times are indivisible or—to describe them positively—they both have only such parts as are actively present in each other. Not statically, therefore, but actively or dynamically their parts are coextensive, each being at once local and omnipresent and at once momentary and eternal. This is a paradox, I know, but in general paradoxes are the highways of progressive thought, of thought that outruns its forms and traditions, and in particular no one would dispute me for an instant if I should say that all the peoples of the earth, though widely separated, are actually living within each others borders and adopting each other's histories. The life of humanity is differentiated but in none of its parts or expressions confined to special place or special moment; it is, to reminisce a little, not an endowment, not a peculiar possession here and there or now and then, but the affair of an indivisible whole, of a whole whose very parts, like the parts of an organism, in a sense that is perfectly genuine are coextensive and contemporary. Space and time, however, are only more general than territory and history; they are the territory and history, not of an organic human society, but of all that is; they are, as if incarnated, the very principles of territory and history; and mathematics to-day, as is generally known, in its conceptions of motion and force is finding the same omnipresence or active coextension of parts in space and the same contemporaneity in time. But a space of whose parts coextension or omnipresence is true and a time whose parts are contemporary are themselves spaceless and time-

less with the meaning that they are superior to limitations of mere distance and mere duration and in consequence they can be said to be intimate with reality.

For the sake of emphasis I must even repeat that what has been said about space and time would be meaningless as well as paradoxical apart from the dynamical as distinct from the statical point of view, just as the unity or indivisibility of territory and history was meaningless apart from the view of all humanity as a living organism. Indeed by reason of the intimacy or co-extension of their parts, an intimacy that the conception of infinity has disclosed to the scientist, both space and time are of organic character themselves. Mathematics has the habit of changing its views of figures by projecting them now on this plane, now on that, and analogously space and time are describable as projections. They are projections or say special transformations of the basal principle of organism, that differences and unity are essential to each other, upon separate planes.[1] All possible projections, however, can be only different views of one and the same thing and we cannot but conclude, what probably no one would dispute, that space and time or say coexistences and sequences are not only intimate with reality but also intimate with each other, each being a truth about the other, a visible token of something hidden in the other. For example the coexistences of space, being coextensive, must have some

[1] In a note I may go a little deeper and suggest that space and time are projections of organism upon the two planes of unity and difference, or of mere being and mere change. The coexisting differences of space show the nature of the space-projection of organism, since space alone is materially empty or homogeneous. Coexisting differences cannot but be unsubstantial. For anything merely to *be*, or exist, different from anything else is for it to be in effect different only formally, not really. Differences of any greater degree requires more than sheer existence. Differences that are not indifferent require expression, movement, action. Hence the space-projection has its complement in the time-projection of organism. Reality, then, is neither spatial alone nor temporal alone, but spatial-and-temporal, and, to complete the circle, a reality that is spatial-and-temporal is organic. Hence, too, any thought of a separate material reality, of a matter that may be in space but is not of it, is wholly gratuitous, as is pointed out in a subsequent paragraph. Thought of a separate matter is necessary only when space and time are themselves without omnipresence or coextension and contemporaneity of their parts.

close relation to the sequences of time and the sequences of time, being contemporary, to the coexistences of space.

But illustrations, however dangerous, are now quite imperative, for without them I may seem to be lost in a wanton waste of unmeaning words. Only before turning to illustrations let me say that in a philosophy of evolution no problem can be more central than this of the relation of sequences and coexistences, and certainly no solution can be more suitable than the vital intimacy of the two which is here asserted. Indeed, the three intimacies which have been touched upon, that of the spatial and temporal with the real, that of all the parts of space or time with each other and that of space and time themselves, each with the other, being one and inseparable, are indispensable to an understanding of evolution.

Illustration of these intimacies, but particularly of that of sequence and co-existence, is in the fact, which is familiar to us or at least needs only mention to be recognised, that the different stages of any life-history are quite readily identified with coexisting phenomena or that the different stages of evolution as a whole are exemplified in different phases of the present. Both in the doctrine of recapitulation and in the idea of environment, biology is very near to a direct recognition of this fact, for in the first place the inner truth of recapitulation, when carried to its last conclusion, can be only the coexistence of sequences; and in the second place, any environment, yours or mine or any living creature's, is nothing more or less than a sphere of coexistences in which the past and the future are organically contemporised with the present. The individual recapitulates its evolution; the individual is a function of environment; environment is a sphere of coexistences: only put these three things together, adapting them to each other, and you will see how biology to-day is bringing sequence and coexistence intimately together. Then, as if to crown all, remember that for the same biology, which entertains these doctrines of recapitulation and environment, life is no local and temporal endowment but the affair of an indivisible whole.

Take a very simple case. Think of the surroundings of a pedestrian to whom as he moves along both past and future are al-

ways materially, coexistently, contemporaneously present. Change there is of course, but only in the form of a perfectly continuous expression of the persistent relations of coexistences. In terms usually employed differently it is a change that is as conservative as it is radical; and, to make the general application, what the complex system of coexisting landmarks is to the pedestrian the manifold conditions of human activity are to human history and environment at large to life's evolution.

Again, psychologically, consciousness which is not to be separated from life and which is so peculiarly concerned with experience in temporal series, includes memories and foresights or prophecies that are always incident to present physical and physiological disturbances. To appreciate the significance of this one needs only to remember, first, that the "present disturbances" have their place in the unity of all nature; and, second, that even the consciousness of modern psychology, like the life of modern biology, is no local and temporal endowment.

Biology and psychology, then, give evidence that sequence and coexistence, being veritable functions of each other, can be equated. But the same testimony comes from the mathematical sciences also, and if possible with even greater emphasis. A formal science is chiefly valuable for the pure light that it casts upon ultimate principles, material sciences being more or less colored and obscure. In the current physics, so thoroughly imbued with mathematical ideals, motion and force, affairs as they are of the indivisible universe, imply the very contemporaneity or coexistence of sequences or the sequence of coexistences that has been considered here. Does not physics describe motion in terms of a law that quite transcends the mere differences of past, present and future? Has not mathematics through its use of limits and infinitesimals turned the very coexistences of space into motion?

So, if we are to take the sciences, formal and material, seriously, sequence and coexistence, time and space must be truths about each other, each a witness to something in and of the other, space of contemporaneity even in time and time of motion even in space. Moreover, nothing can testify more strongly to the intimacy

of space and time with an omnipresent and eternal reality that this intimacy that they have with each other, for, to repeat, space or coexistence conserves the temporal, making it eternal, and time or sequence realises or expresses the spatial or local, making it omnipresent. To recur to the first illustration, how lawless, how idle and empty history would be apart from territorial conditions and resources and how meaningless territory would be apart from the realising movement of history.

It now appears that in a perfectly genuine sense and in a sense of greatest importance, flagrantly paradoxical though the form of statement is, being anywhere is also being everywhere and being ever is also being always, and in so far as this is an account of reality as well as a report of the nature of space and time it must contain the conception of immortality that we are seeking here. Moreover, it is quite as applicable to the being of such conscious creatures as you and I as to that of the material elements which the physicists are pleased at times to call "centres of force" in recognition of their reality beyond their own time and place. Still before we turn to the doctrine of immortality which our monistic and evolutional view of space and time would justify, a third conception, that of matter, awaits attention.

The conception of matter must be and may be very briefly treated. From our present standpoint matter as a form of reality that may be in space and time but is not also of them is an wholly gratuitous thing. The spatial and temporal is the real; in and of itself it is material. An indivisible space and an indivisible time are quite incapable of *containing* anything, be it matter or whatever else you like. They cannot *contain* matter, because—to repeat—by dint of their unity, by dint of their mutual intimacy, they are matter. This is perhaps a strange conclusion and over-subtle as well as strage, but surely evolution requires it and evolutionists are more or less directly admitting it. What would become of evolution if the spatial and temporal and the materially real were not one and inseparable? Evolution simply needs space and time—the latter perhaps more obviously—as positive dimensions of reality. And thus the mathematical physics and chemistry of the day,

as if to serve the interests of evolution, are even sometimes confessing and are always implying their independence of a separate material substance. Peculiarly for them the spatial and temporal is the material. But would you still insist that motion is unthinkable apart from a separate matter, since there must surely be something to move? Then you forget, what has indeed been already referred to here, that mathematics, whose infinitesimal reveals wonders and seems even to perform miracles, finds motion, not of something in space, but in and of space itself. And as for force, which is another concept that may seem to be in need of a separate matter, through which as it were to get an effective reality, this can be only the necessity of motion.

But, further, not only from our present standpoint may we and must we dispense with the thought of a separate absolutely non-spatial and non-temporal material reality, but also we can and we must recognise the matter, by virtue of which the spatial and temporal is materially real, as spirit too, so that a separate spiritual reality as well as a separate material reality can be dismissed. The real, in short, is one, not two; it is at once material and spiritual, being material because spatial and temporal, and spiritual because indivisible and giving to its parts a genuine omnipresence and eternity. All of which is but to say that in the conception of organism, which we owe not less to physics than to psychology, not less to mathematics than to biology, the material and spiritual are inseparable; in it they are made as inseparably one as in its special and most directly human example, the brotherhood of man. Since the dawn of Christianity divinity has meant, more than anything else, the unity of human life. In fact, the objective sciences are far from being alone in this testimony to the identity of the material and the spiritual, for in the popular consciousness, whenever it turns to morals and religion, there is a growing conviction that spirit and matter—nay, even God and man—are not two separate natures but one. And the ideal life to-day exists—does it not?—in an adequate expression of worldly relationships, spirituality being no cloistered existence but active adaptation to affairs of the day.

Somebody protests, reminding me that if matter is also spirit it must at least be alive and conscious. So it must and so it is. Matter, identified as here it has been identified with an organic reality, *is* alive and conscious. Surely, it is comparatively simple to put together all the different testimonies of the several sciences and make one truth of them. Motion and force and life and consciousness are each and all recognised as belonging only to an indivisible universe, and this does but mean that one is no longer bound, as the pluralists are, to find motion here and force there and life and consciousness in their own separate places, for all, if they must be located, are coextensive; wherever the one is the others are; and such coextension means essential unity. I know very well that prominent thinkers of quite recent times—only it seems to me that they stop their thinking where they most need to begin it—are greatly troubled over a seeming contradiction between the physical law of conservation of energy and the idea of consciousness as effecting physical changes, for example, as altering the positions of molecules in the brain, or again between the doctrine of survival of the fittest and that of consciousness as a result without being a condition of evolution, but—not to say more—such thinkers are certainly thoughtless enough to be standing in their own light. Conservation[1] and consciousness—which *is* a condition as well as a result—and life by survival of the fittest are hardly inconsistent, when if squarely faced they one and all testify to the unity of the same universe.

But I must continue my argument. Space and time and matter have been examined sufficiently for the purposes of this paper, and the monistic and evolutional conception of immortality can now be presented more fully and more directly, first, in a general way, that may seem still formal and abstruse, and then in the way of illustration and application.

[1] Conservation is thoughtlessly supposed to refer to a fixed quantity, but this reference is absurd, for the quantity would have to be finite and the constancy of a finite quantity is unthinkable, being a contradiction of terms. As for infinity, this is not a quantity at all but as commonly used a quantitative abstraction for quality. See also article *Physical Psychology*, in the *Psychological Review*, March, 1900.

Instead of identifying immortality with the simple and indivisible in the sense of that which is altogether out of space and time we must identify it with the organic, which although complex is nevertheless also spatially and temporally indivisible. The composite and divisible may decompose and decomposition is death, but the organic never dies. I do not say that organisms never die and certainly I do say that there are no minute immortal "vital units," as if life-atoms; all organisms, great or small, do die or rather as so many independent individuals they are never alive. The organic is one, not many, and its very changes are an incident of its peculiar unity. It changes, but is only in its changing; it changes, yet never dies. The death of individuals is the life of the One, of the Whole, to which they belong; and, more than this, it is their life too, their real life, for—if I must repeat—as separate individuals in a divisible space and time they are never alive. The organic, then, is a constant triumph over death, and above all over the death of individuals; and also, as something which it is important to add and which is not less worth reflecting upon, it is a constant triumph over birth. Individuals, *real* individuals, even as Christianity would have it, are not begotten, nor do they die.

And what can all this mean? Such verbal formulæ are abstruse; they are blind. All that has been said about the spatial and temporal being also omnipresent and eternal and so one and the same with the real, or about matter being spiritual and spirit material, nay, life itself and all that life includes may be in them and in them as compactly as Newton put the solar system into the law of gravitation, but still one has to ask: What do they mean to humanity? To human history? To human hope?

They mean—do they not?—that transfiguration of individuality which was referred to at the beginning. Where the real is the organic, where life and consciousness are not local and temporal endowments but affairs of a universe spatially and temporally indivisible, individuality can consist, not in local and temporal existence, nor yet in separation as an immaterial entity from the spatial and temporal, but only in something that forever holds the here and the yonder, the now and the then, the this and the that, in-

separably together. And what can ever do so much as this? So commonplace a thing as life does it and consciousness does it. Life and consciousness, standing as they do for the intimacy of our relation to the outer world, an intimacy which is so complete that the life or the consciousness belongs not less to the world than to us, are that in which the here and the yonder of human existence, the now and the then, the this and the that, are held inseparably together. What indeed have we been led to believe of the outer world? It is our whole history, nay, our whole evolution, our past and our present and our future, made contemporaneous or all the existing incidents of our being active as one. And what are we as conscious and animate but intimate functions of that which encompasses us? As creatures, then, that have hands, that walk, that are members of families, that belong to human societies, that have manifold relations to nature at large, we live and move and have our being, our conscious being, in an activity that for each particular function, for each particular relation, is as far-reaching and as deep-lying as the universe itself. In the love and service of a mother as in the simple action of a hand that seizes something, the here and the yonder, the now and the then, the this and the that, are bound together. Why, the force of all nature is in the hand's movement, and the motherhood of a universe in any mother's love and service. Spinoza, whose suggestion upon this matter I am fond of quoting, once said in so many words that the hammer was not created, since it takes and must have taken a hammer to make a hammer. Plainly this means that hammering as an activity is as old as reality, and the hand as old as hammering. Moreover not only eternity but also universality belongs to the hammer, for from the standpoint of principle the hammer is in all tools and all tools are in it, and if any tool—and this means any thing or force or value in environment—is both eternal and universal, then any activity is also both eternal and universal. Motherhood, then, or whatever else in the life of mankind makes individuality is immortal and universal; and this is to say that it is one and indivisible. Who does not cherish the unity of all motherhood? Who does not apply, and delight in applying what the scientists call the unity of nature

to the relations of family as well as to the other relations, the other functions or activities of life? Space and time may have or bring their differences but the life and consciousness of motherhood is everywhere and always one and the life and consciousness of anything that gives life value and us that live individuality is always and everywhere one. Can we forget, after so much reiteration, that even conscious life is neither local nor temporal? Birth and death are indeed incidents of individuality, but they are not makers of it; they neither create nor destroy it. Is the hand no more than a physical mass existing here or there and now or then? Common sense as well as philosophy makes it more. The hand was never born and will never pass away. All individuality, then, be it that of the hand or of some distinctly social function or of sex or of any active relation whatsoever, is as immortal as individual; it fills all space as well as this space and all time as well as this time.

Somebody objects vigorously, charging that I am abusing words and no word so much as individuality itself. This charge, however, as I understand it, is a strange one. Aside from the philosophical interest in consistency, which is naturally so keen with with me in this paper on evolution, I cannot understand how any one who has ever taken his belief in immortality seriously can object to being told that individuality not less now than heretofore or than hereafter is a function instead of a mere existence, or suppose I say a loyalty instead of a mere selfishness, or how any one can entertain the Christian doctrine of the brotherhood of man and then interpret the Conception or the Resurrection in any other way than that which finds in them the reality, the abiding reality in the sense of independence of the conditions of birth and death, of an individuality, which is a relationship, an active human relationship, not a physical nor yet a spiritual or immaterial isolation. How can any one help seeing in those great conceptions, and I am willing to say too in those great facts, that the activities which have any meaning, which make our being worth while and us real, are referable only to life or existence as a single persisting whole? Only remember, what in substance I keep saying, that the whole is one which changes; it is and it *is* only in its changing; it changes but

never dies: and in it we live and move and have our being, our conscious being.

But, still unconvinced, some one insists that consciousness *is* born and that consciousness *does* die, for there is no memory in a new-born child and we have no communication with the hereafter, such experience as may possibly belong to us before birth or after death being altogether different in kind—if it is at all—from the rational consciousness of our worldly sojourn. Very true; one can not avoid saying just this and believing this, if one thinks of consciousness as only the special endowment of certain physically determined individuals. Consciousness, however, as said now so often, is anything but that and since it is so different we can expect, we can find different things in it. Moreover, to suggest a question of fact, as regards a child's lack of memory we may ask most pertinently if in the sense meant anybody ever remembers anything even from day to day. Memory, I venture to say, no doubt with the prejudice of monism and evolution but also with science at my back, is never a literal reproduction or retention of past experience; it is always only a peculiar adaptation to conditions of the present; and so understood it belongs as much to the youngest infant as to you or me.

And with reference to the lack of communication with the hereafter it seems to me to be also quite pertinent to say, in the first place, that consciousness never is without prophetic character, although its prophecies like its memories cannot be literal, and secondly that the sort of literal communication between the living and the dead, which some do indeed believe in and the denial of which was just now used in evidence of consciousness being limited to the period from birth to death, is not even the privilege of the living among themselves. Consciousness in general relates us to what is different or other; its function is one of differentiation, not of direct communion, whether of man with nature or of man with man; and in what we call conscious communication not only are the conscious creatures differentiated from each other but also they are related to what is beyond them, and not merely to what is near but also even to what is farthest, in space and in time. The so-

called relativity of all individual consciousness or of the consciousness of a group of communicating individuals, affording as it does only another view of the fact that consciousness is an affair of the whole and so belongs to individuals only as they can be identified with what is universal and eternal, is the reason for this transcendence of limitations, for this communication with the yonder and the hereafter that belongs to all consciousness.

Is this spiritualism? Hardly. Is it even mental telepathy? Not even that, although it is to recognise a germ of truth in both mental telepathy and spiritualism. The worst extravagances unfortunately—or perhaps fortunately—always have some justification. To speak technically the difference between the spiritualism and the telepathy here recognised and the spiritualism and the telepathy that have had some vogue in the life of our time is the difference between monism which finds the spiritual and its independence of space and time in and of the material and dualism which finds spiritual and material wholly apart. With the spiritual in and of the material the spiritualism of the day loses the wind from its sails, for the here and the hereafter, this world and the other world are made one in life and in consciousness, so that a verbal communication between them becomes unnecessary. No doubt, when I said above in the discussion of space and time that in a thoroughly genuine sense nothing was anywhere without also being everywhere and nothing ever without also being always, any one who is imbued with the standpoint of science, must have been ready at least at first reading to call me all sorts of abusive names and "arrant spiritualist" among the rest, but the sense, genuine as it was, in which I used the paradoxes must have saved me. I meant no denial of the impenetrability or the conservation of matter or of whatever in the most recent theories is now standing for these and no dislocation of historical order, but on the contrary I meant exactly what science itself has been meaning, namely, the unity, the material as well as the formal unity of all that is. Only to take this unity seriously—and too many do not take it so—is to believe that the yonder and the hereafter are here and now, that they are actual and active in the life and consciousness of the pres-

ent, but not directly and not literally, not in the forms of knocking and slate-writing and crystal imagery. Certain worthy mystics and dualists, be they in high places or in low, may believe in these uncanny wonders if they like, but writing and imagery and all are I think, safely described not as the future's direct messages to the present but rather as the present's readings of the future or as only the present's peculiar adaptations to certain unusual conditions, the peculiarity being perhaps most evident in their conspicuous futility. As reminiscences they are so idle, satisfying at best only a morbid curiosity, and as prophecies they belong to the *ex post facto* sort. Literalism, verbalism is always futile. Given a well-set conviction of dualism, of a complete separation of the material and the spiritual, to start with, and one can, nay, one must explain the fact of communication spiritualistically; one can and one must distort the fact into all sorts of things uncanny as easily as a fugitive from justice sees an officer in every shadow or as an excited person recognises the signature of a telegram, but it suffices to say that the dualism is wrong. That the spiritual does communicate with the material who can doubt? But it speaks in and through the life that is, not from without to it, and this being so it needs neither slates nor crystals and it might possibly get along without Mrs. Piper. There are cases, I know, cases both of telepathy and of spiritualistic communication, that are reported and that are about as hard to doubt as to explain, but in a world that is one and indivisible and that is spiritual in being material at least the bare fact of communication is to be expected, not wondered at, and as for the manner of it, besides repeating that it is only a peculiar adaptation to unusual conditions, I venture merely to suggest that what is actually done voluntarily and in general whatever can be consciously arranged is bound to occur at times, although at rare times, involuntarily.

I have disgressed long enough, if indeed it has been disgression to speak of spiritualism and its kind. That consciousness was not born and does not die was what I set out to show and I must now hope that this thought has been at least foreshadowed, but in any case, to fall back on my base, a genuine evolution is certainly quite unthinkable without it. Consciousness must be quite as much

a condition as a result of evolution and in a world of which evolution is true it can not be local and temporal, it must be as widespread and as persistent, as all-inclusive and as indivisible as life itself.

So, to return, by way of indicating still more directly the meaning to human life of the monistic and evolutional conception of immortality I would conclude by speaking briefly of its effects on the interpretation of history, on our feeling about the life and death of our fellows, and on the primary doctrines of Christianity. We commonly think of history as the passing of persons, nations, civilisations. Men come and go, but history runs on forever. To be sure, it accumulates, as if its gifts from humanity, innumerable treasures, books, relics, institutions, buildings, machinery and the like, but the donors, as we are want to think, are lost to it, remaining as ideal influences perhaps but not as vitally active in the life they once assisted. This common view, however, must be wrong. At least it is hardly consistent with the best thought of our day. The past is contemporary with the present, not merely formally contemporary, in that we know it only in the light of present standards, but materially contemporary also in that those that were live now. Have we their literature? Yes, and their consciousness too. Their institutions? And also their life. Their achievements? And their power and will. Altogether too fanciful, some one thinks; but do give it meaning from the standpoint of what has already been asserted about individuality, about the spatial and temporal, about life and consciousness. Our life and our consciousness and our will are theirs also, for it is wrong, it must be wrong to think of the life of the past and the life of the present as two lives, as independent and perhaps even different in kind. The two are one, vitally one. Not those that are now gone once lived and we live, but they and we are living, they in us and we with them; they live in us, to give a familiar analogy, that is perhaps more than an analogy, very much as our own past selves are alive with us to-day. If a physical scientist can see the same force in the military weapons and engines of ancient times that he sees in those of our own time, if a sociologist can find the same social phenomena then and now, may

not the historian regard the older life in general and the newer life as not less intimate? Did different winds blow in 1492 from those that blow to-day? Was it a different sun than shone in 500 B. C. or in 500 A. D. from that which shines to-day? We do not deny that the animal nature is still alive in us as well as around us, although at the same time we suppose it to belong to a very early period in our existence, in what we are pleased to call our evolution. Why, then, should we exclude what is so much more recent? Can we, foresooth, satisfy ourselves with the materialism that entombs the historic past in books and monuments? Then we forget how books are written and how monuments arise and how in general the past comes to be. The future writes books and erects monuments. The past's great men, to turn to them, have always been, as if made by the future, "ahead of their times." Surely a most uncanny phrase, unless one can find the life and deeds of all times to be the life and deeds of one time. A man is great only as he identifies himself with some social force, with some actual movement of his day, fulfilling it out of a long past, bringing it to focus and so making it definite and manifest, and as the life around him, which gave him birth, in proof of his greatness in turn identifies itself with him, adopting his will and repeating his achievement. History has many cases of human societies repeating in their life as a whole, the careers of their great men. Only it is not repetition exactly; it is resurrection and continuation. Great men make history, but they make it only because they are alive in it before their birth and survive in it, in its doing and in its thinking, after they die. Would history be even thinkable without such continuity? Could we honestly call it our history? What good American to-day is not convinced that he has a share in what Washington and Lincoln accomplished years ago or also—and this we regret—in the doings of Arnold and Davis and Booth? And, to put a very practical question, would it not be well if in the popular consciousness our great men, whether good or bad, were really identified with history instead of being treated as fixtures outside of it? Make them separate fixtures and you make them oracles, the spirits of another world, with which the demagogue, as if a medium, can ex-

cite the people, but identify them with history and they grow with it, speaking always out of the present, never out of the past. Hero-worship is too often idolatry, and for my part the literalism of it is only spiritualism trying to be respectable or say spiritualism under the law. Every bad thing, of course, has to have its lawful or respectable expression.

So much for history, for the life with the past, for relation to the great, but what of friendships and family ties? Can we view these in the same light? As an evolutionist I think we can; I think we must; I think we would. Perhaps I may not speak so freely here, for the mind rather than the heart is now addressed but the relations of friendship and kinship are not born nor do they die and friends abroad and kin at home live and move and have their being only in these. Does it destroy or even weaken the meaning or the reality of friendship to have it said that the relation is as universal as particular or local and as eternal as temporal? On the contrary, universality is essential to meaning and to reality. Is the consciousness, the experience, which we call friendship, to be separated from consciousness or experience in general? If so, our friends do die, remaining to us, like the characters of the older history, as only ideal influences or as spirits that sometimes idly chatter. But friendship, like experience in its entirety, is of the whole as well as of the part, and the friends that lived live still. In others? Yes, and in ourselves too, or rather in the relation of man to man or in the unity of all that lives, of all that is. Not literally in others, then, although the meaning is perfectly genuine, nor yet literally in ourselves, for nothing like transmigration is intended, but—to repeat—in the living relationship of friends. There is indeed a truth in transmigration; witness all the facts of inheritance, of historical succession, of social growth, of evolution, but it is the truth or is near to the truth of what physical science, thinking of force and having such meaning as we are coming to know, has called transmutation, the truth of a reality that is conserved even in its changing. So, again, the friends that lived live still. Brotherhood, however, and fatherhood and motherhood and all the relations of kin, nay, all the relations of life, that make our indi-

viduality real, persist in the same way; for they are also one, not merely many; everywhere, not merely here; and always, not merely now. Where would faith go, and where worth and responsibility and freedom, if birth created and death destroyed, or if birth were a coming from no one knows where, from a realm unlike and apart, and death the return? Birth does not create or translate; it only expresses, revealing and defining. Death does not destroy; it only fulfils.

Mere words of philosophy! Possibly. And Christianity has said, and said again and again, the same thing. To science, I know, we are peculiarly indebted for the conception of organism, of an organic reality, which enables us to bring together the universal and the individual, the eternal and the temporal, the omnipresent and the local, without losing the worth or the reality of either, but when all is said science has only applied at large the very special and personal doctrines of Christianity and has therein helped Christianity to a clearer consciousness of itself. Some of these doctrines have been referred to already and others may be mentioned, although discussion of them is even more constrained than was that of kinship and relationship. The Resurrection, the Immaculate Conception, the Divinity, the Immediacy of the Kingdom of Heaven, the Sacrifice, and the Brotherhood of Man are doctrines which one and all testify that our real being, our real individuality, lies not in a separate existence of any sort but in the abiding relations of our present life. In these the Christ resides, the always living Christ. What else can the following mean? "In as much as ye have done it unto one of these, my brethren, even these least, ye have done it unto me," and again: "For whosoever shall do the will of my father which is in heaven, the same is my brother and sister and mother." The Living Christ, one of the dogmas of our day, is more than a fancy and more than a dogma, and for no one so truly as for an evolutionist. Christ was too great, too deep-lying, and too far-reaching in human history not to be more. Often we are told that the letter of Christianity has got to go, but it is quite as true that the real letter of Christianity has got to stay; the real letter, I say, not the parody of a mere physi-

cal appearance and reappearance nearly two thousand years ago. If Christ was really not born as men are born, if he really lives in our lives to-day, if Christianity really means the brotherhood of humanity and the divinity of man, then simply the Christ was more than the creature of a single moment or a single place and more than the creature of another world, and instead of resorting to such facts as partheno-genesis and trance to explain the birth and the resurrection we must identify him with an individuality that is neither purely physical nor abstractly spiritual but both physical and spiritual. Certainly, he was in his times, *but he was also of them*, so that the universal as well as the local, the eternal as well as the temporal was in him, and to-day he is in us, being one with the relations of family, the relations of society, the relations of nature, in which we have our being now and hereafter.

Nothing that is worth having or worth getting or worth saving, nothing that is real and abiding, nothing that is worthy of immortality, is not already real in us, real in our life, real in our experience. For evolution the maintenance of what is, nothing more, nothing less, is our immortality.

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THE CONDITIONS OF HUMAN PROGRESS.

BEFORE passing in succeeding essays to the relation of science to metaphysics in ethics, in æsthetics, and in history, it will be well to consider some of the conditions of human progress. Regarding as we do the whole range of social phenomena as susceptible of scientific explanation in terms of antecedence and sequence; regarding evolution as the key to this explanation; and regarding animal behaviour as affording some evidence of the embryological condition from which human conduct has been developed; we feel convinced that the foundations of any adequate study of social phenomena must be laid in biology; and that the lessons of organic life must be laid to heart by those who would apply the principle of evolution in the study of mankind. We shall first, therefore, discuss our problem in some of its aspects from the scientific standpoint, and then briefly indicate some of the metaphysical implications.

In the days before Evolution was on every one's lips, human faculty was regarded as a special endowment, variable no doubt, but subject to no definite law of increase within any given race or community. Unusual ability was indeed expected, and not infrequently found, in the sons of conspicuously able parents. But, broadly considered, the progress of civilised mankind was attributed rather to increased opportunities for the exercise of given moral and intellectual power than to any general and steady improvement in natural endowment. Human institutions, discoveries, inventions, art products, were seen to grow under the hands of successive generations, each of which contributed more or less to the social heritage of the community; human faculty was obviously

employed to better and better advantage as the social conditions improved from age to age; but of any progressive evolution of mother wit and innate ability our forefathers seem to have had no conception, or at any rate could produce no sufficient evidence.

But when the idea of organic evolution had gained ground and when the evolution of mental faculties came more and more prominently into view, the question inevitably arose whether human faculty was not also in process of development. Mr. Herbert Spencer strenuously contended that the increase of mental vigor acquired by parents is transmitted in some degree to their children, who thus start at a higher level of natural and inborn intellectual power than their progenitors. And if this occur in civilised mankind it follows that the average level of mother wit and innate mental force is higher in England to-day than it was in the reigns of the Plantagenets or the Tudors. Darwin's advocacy of natural selection as the main cause of organic progress led to its application in human affairs. And if natural selection be still operative among the individuals which constitute a civilised community, it follows that, by the survival of the better endowed intellectually and morally, the level of human faculty must steadily rise from generation to generation. Assuming therefore that the principles developed by Mr. Herbert Spencer and by Darwin are sound, and that they are applicable to human folk under the conditions of civilisation, it would seem that not only is there a steady progress in the opportunity under which mental faculty may be employed, but also an increase of the faculty itself which may be so exercised.

Neither Mr. Spencer's principle, however, nor the application of natural selection to civilised communities, pass unchallenged at the present time. We must therefore consider briefly the criticisms to which they may be subjected, and endeavor to formulate anew what appear to be the conditions of human progress. It will be convenient to deal first with natural selection.

The method of natural selection as it is commonly held to apply in the evolution of animals and plants is so well known as scarcely to need description. And yet there still linger popular misconceptions which are perhaps nowhere more obtrusive than in

the field of thought under consideration. Since competition and the struggle for existence are essential features in Darwin's conception, and since competition and struggle are sufficiently obvious among civilised mankind to-day, the conclusion, by no means necessarily true, is rashly accepted that natural selection is the inevitable outcome of this competition. But natural selection results from the death, or the exclusion from mating, of the unfit, leaving only the more fit to survive and mate. It is founded on three assumptions; first that, among those who are born some are by natural endowment fittter than others; secondly that there is competition; and thirdly that under this competition the less fit are ousted from the race, and the more fit alone remain to perpetuate their kind. Now there can be no question that the first two assumptions hold good in civilised races; some men are born with better natural faculties than others; there is a struggle for existence. But how about the third? Can we assert with the confidence of conviction, that those below par, morally and intellectually, are being weeded out, and that only those who are above par marry and have children? Can we even say that the children of those who are above par, steadily out-number the children of those who are below par? Nothing less than this will suffice to establish even the preliminary assumptions of natural selection. Such evidence as we have appears rather to support a contrary conclusion. In no important degree is there an elimination of human failures. Civilisation does all it can to asist and to protect them. A struggle for existence there is—and a hard enough struggle many find it. Competition there is—more than enough. But of elimination of the unfit, leaving only their moral and intellectual superiors to marry and have offspring, there is, it may be urged, not so much as to counteract the effects of the extravagant output of children among those below the mean level of mediocrity. Consider what the natural selection as a factor in progress means. It means that in any series of generations the offspring of those endowed with better mental faculties—those offspring which reach the age of effectual parenthood—outnumber the children of those who are less favorably endowed. Can any reasonable man believe that this is obvi-

ously true of human beings under the conditions of what we call civilisation? This is the question asked by those who criticise the application of natural selection among ourselves to-day. And they contend that, as an influence of any importance on human progress in civilised countries, natural selection is out of court.

What then can be urged on the other side of the question? It may be said that the microbe, the seeds of disease, and drink are still with us, and effect a certain amount of elimination. But, so far as mental endowment is concerned, it has to be shown that disease and drink remove a greater number of those who are below the level of intellectual mediocrity than above it. Granted for the sake of argument that, paradoxical as it may sound, disease is the condition under which, in spite of the doctors, a healthy race is evolved (and this is what the above argument practically comes to); is the more healthy race necessarily endowed with better mental faculties? Unless this can be shown to be the case the improvement of mother wit by disease remains unproven. Again it may be said that the scaffold and the prison tend to eliminate from the community our social failures. The criminal classes may, on this view be regarded as bunglers in knavery; too weak morally to resist temptation, too weak intellectually to escape detection. Granting, however, that there is here some amount of elimination, it can hardly be regarded as sufficient to bring about any material raising of the mean mental standard of civilised folk. There remains emigration which removes from Great Britain a small percentage of those who are commonly regarded as our failures. Whether the mean capacity of emigrants is decidedly lower than of those who are left behind is exceedingly difficult to decide. While many of the poorer classes who leave our islands are perhaps inferior to those who remain, there are not a few setting forth year by year to America and our colonies who are above par in energy, perseverance, and pluck. Granting, however, that there is through emigration some preponderant elimination of failures, does it amount to much? If it does, it must follow that the mean level of capacity in our colonies is by so much lower than the mean level of capacity in England—an assumption which is not likely to be acceptable in

Canada or Australia. On the whole therefore it is, to say the least of it, questionable, whether elimination by disease, by crime, and by emigration, taken together, outweigh the tendency of the sub-mediocrities to multiply more rapidly than the super-mediocrities. At any rate we may go so far as to say that there is at present no satisfactory and conclusive evidence that, by any process of elimination now in progress, or by any natural selection of the intellectual, the mean level of faculty is steadily rising.

No doubt there is a certain amount of what is termed by naturalists segregation. The more intellectual tend to congregate together and to intermarry; so to some extent do the less intellectual. Hence arises a system of intellectual grades. But when we are dealing with average intellectual capacity we have in view the mean of all grades. Segregation only affects the distribution of the material. If we have a box of shot of different sizes varying around a given mean, no change is effected by mere arrangement of the shot in a definitely graded series. Only if it be shown that the larger human shot multiply more rapidly than the smaller, will the mean size be raised. If the smaller shot multiply more rapidly the mean size will be diminished. In neither case need there be any elimination or selection; it is merely a question of relative fecundity. Only on the supposition that the rate of propagation on either side of the level of mean capacity is equal, will that level remain constant. It is a matter on which evidence is hard to obtain. But there do not seem good grounds for the hypothesis that the super-mediocrities are the more prolific.

Does sexual selection in civilised mankind tend to alter the level of mean capacity? A difficult and delicate question. It comes to this. Are confirmed bachelors and old maids mentally the inferiors of married folk? I dare not answer the question, having close friends in both camps. If matrimonial selection were based solely on mental endowment we should presumably be bound to reply in the affirmative. But good looks and annual income are disturbing factors, and one may at least feel doubtful whether brains are much on the increase through sexual selection.

Thus it would seem questionable whether the distinctively

Darwinian factors of evolution are efficacious in raising the standard of mental endowment in civilised communities. Among savage races and in early stages of the development of European peoples it may have had more efficacy.

Passing now to that kind of heredity on the importance of which Mr. Herbert Spencer insists, we find that the criticism is based on very different foundations. Natural selection is pretty generally admitted as a factor in organic evolution; but, as is well known, the transmission from parent to child of individually-won increments of faculty, or more generally the inheritance of acquired characters, is denied by many of our leading biologists. In the one case it is questioned whether natural selection, efficacious as it is in the evolution of animals and plants, is operative in the case of civilised communities. In the other case it is denied that the inheritance of acquired increments of faculty or structure is anywhere admissible as effective in organic progress. It would seem, then, that this problem must first be solved on general biological grounds before we are justified in applying it in the field of human progress.

We may, however, fairly ask whether the facts of human progress are such as to necessitate the application of some such principle. Is there a progressive advance in mean mental capacity, inborn and hereditary, which demands some such explanation as Mr. Herbert Spencer's principle purports to supply? There are at any rate some writers and thinkers of authority and repute who doubt whether there is any such progressive advance. Buckle, writing in 1858, says, in his *History of Civilisation* (Vol. I., p. 178):

"Whatever, therefore, the moral and intellectual progress of men may be, it resolves itself not into the progress of natural capacity, but into a progress, if I may say so, of opportunity; that is, an improvement in the circumstances under which that capacity after birth comes into play. Here then is the gist of the whole matter. The progress is one not of internal power but of external advantage."

To much the same effect Mr. Lecky, in his *England in the Eighteenth Century* (Vol. I., p. 174), remarks: "How little evidence we have of any great difference in respect to innate ability between different nations or ages. The amount of realised talent in a community depends mainly on the circumstances in which it is placed,

and, above all, upon the disposition which animates it." Mr. Kidd, in his *Social Evolution*, in adopting a similar view, quotes Mr. Gladstone as having said in an interview with Mr. Stead:

"I sometimes say, that I do not see that progress in the development of brain power which we ought to expect. . . . Development, no doubt, is a slow process, but I do not see it at all. I do not think we are stronger but weaker than men of the Middle Ages. I would take it as low down as men of the sixteenth century. The men of the sixteenth century were strong men, stronger in brain power than our men."

Professor Huxley too spoke with no uncertain note when he said:

"In my belief the innate qualities, physical, intellectual, and moral, of our nation have remained substantially the same for the last four or five centuries. . . . There can be no doubt that vast changes have taken place in English civilisation since the reign of the Tudors. But I am not aware of a particle of evidence in favor of the conclusion that this evolutionary process has been accompanied by any modification of the physical, or the mental, character of the men who have been the subjects of it. I have not met with any grounds for suspecting that the average Englishmen of to-day are sensibly different from those that Shakespeare knew and drew. We look into his magic mirror of the Elizabethan age, and behold, nowise darkly, the presentment of ourselves."

All of this is in accord with the conclusions which Professor Weismann has of late years been urging on biological grounds and in which, as Professor Poulton has recently shown, he was anticipated by Dr. Prichard so long ago as 1826. No one has stated the essence of these modern views more clearly than Dr. Prichard did, seventy years ago, when he wrote: "Whatever changes of organisation are superinduced by external circumstances cease with the individual, and have no influence on the race." And no one has expressed their bearing on theories of human progress more clearly than Professor Ritchie when he said in his *Darwinism and Politics*. "Might we not define civilisation in general as the sum of the contrivances which enable human beings to advance independently of heredity?"

No doubt biologists are by no means agreed in the acceptance of these negative conclusions. Mr. Herbert Spencer himself remains unshaken in his original faith. No doubt popular opinion

is in favor of the transmission from parent to child of acquired increments of faculty. But for civilised mankind there are not sufficient statistics and of the right sort, to enable us to come to any independent decision. If we listen to a discussion of the matter we can scarcely fail to notice how the arguments on either side are founded on conjectures. A great mathematician is shown to be the son of parents trained in the mathematical schools. Who can deny, some exclaim, that the special training of the parents is transmitted to the gifted child? How else can we explain the fact that he is possessed of such rare ability in this particular sphere of mental endeavor? And since such cases are numerous and varied, have we not abundant evidence of the transmission of acquired aptitude? To which others will reply: What proof do you offer of the assertion that the aptitude transmitted was acquired and not innate? It is the combined inborn faculty of two gifted parents, not the superadded training, that is inherited. And since this innate mathematical power develops under the careful teaching of trained parents; since the child grows up in an intellectual atmosphere of the higher mathematics, no wonder he displays genius of this special kind, raised to its highest expression by assiduous care and guidance. And so forth. A discussion of this kind, where conjectures gaily masquerade as evidence, is interminable. Neither side is likely to convince the other, because neither has access to the particular facts, and neither has the smallest intention of abandoning its principles. As has before been said the problem must be solved by biologists. The weight of biological evidence at present is, in my opinion, sufficient to justify an interim verdict of "not proven." Our most profitable course, therefore, will be to assume for the sake of argument, that acquired increments of faculty are not inherited, and to inquire what are the conditions of human progress on the supposition that this assumption will eventually prove to be correct.

If it be true that the faculties which lie dormant in the infant over whose cradle the mother bends to-day are no better than those which were innate in the child four centuries ago, it is clear that social progress must lie in the increased facilities and better oppor-

tunities for putting this faculty to its most efficient use. We are in fact thrown back on to the pre-evolutionary position occupied by those who considered the question before Mr. Herbert Spencer and Charles Darwin laid their theses before the world. And it would at first sight seem that evolution ceases when civilised progress commences. Such a conclusion would however be altogether erroneous. The valid conclusion is that evolution has been transferred from the organism to his environment.

Let us turn for a moment to the organic world that we may discover the germs from which this new method of evolutionary progress has developed. And let us first ask what a presumably unconscious organism, such as a plant, inherits. In the first place it inherits, within certain limits, a well-defined form, structure, and habit or mode of growth. In the second place it inherits, in greater or less degree, a plasticity which enables it to accommodate itself to varying circumstances. The characters which fall under the first head are what are technically termed congenital; those which are evoked by the play of circumstance are technically termed acquired. Both the congenital definiteness and the amount of innate plasticity are subject to variation. And the method of progress is through the natural selection of favorable variations. Among the higher animals we find heredity playing a like part. But the plasticity has taken on a new and higher form. Conscious imitation and intelligence render possible a more varied and more complex accommodation to circumstances; and where the animals live in social communities we have the beginning of tradition; we have the possibility of social inheritance running parallel with organic heredity; we have the initial stages of a transference of evolution from the organism to the environment which it creates for itself.

Picture an animal possessed of that innate plasticity which sympathy, a tendency to imitation, and intelligence imply. Suppose such an animal born into a community of this kind. He sees around him the social life of his species. Through sympathy and imitation he is impelled to enter into and become an active participator in this life. His quick intelligence enables him to follow the moves of that life's game, and he throws himself into it with energy.

If above the average of his fellows he may see new moves and carry them into execution; through imitation and sympathy others follow suit, and adopt his methods. The game is raised to a higher level. The better procedure becomes traditional in the species. The next generation are born into a community where life's game is played on an improved and more elaborate plan with better methods and to greater advantage. Even if endowed with no inherited increment of faculty the members of this generation are none the less heirs to a better heritage, that of the improved traditions of their race. Continuity and progress are thus rendered possible in a manner and by methods different from, though arising out of, those which are seen in the organic heredity that suffices for the plant and the pre-social animal. Imitation supplies the element of continuity; intelligence, that of progress. All that organic heredity has to do is to maintain the standard of these two essential faculties. Intelligence will devise better moves in the hazardous game where life is at stake; imitation will enable even mediocrity to profit by them; and succeeding generations will be the gainers, leaving intelligence free to devise yet better methods of procedure.

Such an animal is man. In his civilised state organic evolution in the race, conditioned by natural selection, has been superseded by evolution of our social environment, rendered continuous by tradition. Between the lower animals in which organic evolution prevails, and the Anglo-Saxon race of to-day among whom the evolution is of the social type, lie many grades in which the two methods overlap. The transition has been gradual. But as man became more distinctively human, and as civilisation advanced, natural selection slowly but surely waned and the social type of progress slowly but surely waxed in range and importance.

The two pre-requisites in any process of continuous evolution are continuity and progress. What, we may inquire, is that which makes social evolution possible? If we were to ask half a dozen leading men to reply to this question in a single word, each would perhaps give a different answer. But each answer would emphasise either the element of continuity or that of progress. Mr. Balfour's reply is: Authority.

"Suppose for a moment a community of which each number should deliberately set himself the task of throwing off so far as possible all prejudices due to education; where each should consider it his duty critically to examine the grounds whereon rest every positive enactment and every moral precept which he has been accustomed to obey; to dissect all the great loyalties which make social life possible, and all the minor conventions which help to make it easy; and to weigh out with scrupulous precision the exact degree of assent which in each particular case the results of this process might seem to justify. To say that such a community, if it acted upon the opinions thus arrived at, would stand but a poor chance in the struggle for existence is to say far too little. It could never even begin to be; and if by a miracle it was created it would without doubt immediately resolve itself into its constituent elements."

And in answer to another who should reply: Not Authority but Reason—he says:

"If we are to judge with equity between these rival claimants, we must not forget that it is Authority rather than Reason to which, in the main, we owe, not religion only, but ethics and politics; that it is Authority which supplies us with essential elements in the premises of science; that it is Authority rather than Reason which lays deep the foundations of social life; that it is Authority rather than Reason which cements its superstructure. And though it may seem to savor of paradox, it is yet no exaggeration to say, that if we would find the quality in which we most notably excel the brute creation, we should look for it, not so much in our faculty of convincing and being convinced by the exercise of reasoning, as in our capacity for influencing and being influenced through the action of Authority."

Now what is this authority but the articulate voice of tradition? Is it not the condensed expression of all that is most valuable in social inheritance? May we not fairly regard the influence of authority as that which gives continuity to the thought and feeling of civilised mankind? May we not say that it represents the accumulated experience of our race? Authority links us with the past. So far we may agree with Mr. Balfour. But in authority, though we may see in it the bond of continuity, we do not find the promise of progress. The authority of to-day is not, and should not be, the authority of yesterday. If it were, social evolution would be impossible. While authority is the bond of continuity, reason is the mother of progress. Under the influence of authority man enters into his social heritage, and falls heir to the achievements of his race. Is he to rest content with transmitting this heri-

tage unimpaired? No. Much of it indeed he must leave unmodified—for life is short and the inheritance of vast extent. But he chooses out some larger or smaller plot of ground in the great estate and says: "Here will I dig, and sow, and reap. This corner of the estate shall be the better because I have lived and worked therein." In other words, selecting his field of labor, he critically tests, modifies, and, if it may be, enriches the heritage which shall pass to succeeding generations. He not only hands on authority but he becomes *an* authority—one who makes history. This is the office of reason. Of course it is only the gifted few who leave their impress on social existence—who are in the highest sense teachers of mankind. But though teachers be few their pupils may be many. Have we not all learnt from Shakspeare and Newton? Has not Darwin made the authority of to-day different from that of 1858? Every discovery, every art-product, every invention; our philosophy, our science, our music, painting, sculpture, literature; our museums, art galleries, theatres; our steamships and monster manufactories; our intellectual, moral, and æsthetic environment; what are all these but the embodiment of the ideals which our forefathers or contemporaries have striven successfully to realise, and have impressed on the heritage of the race? They remain to give continuity to social evolution; they form the social structure which future generations will progressively modify to higher ends. This is our social heritage; this we must strive to better ere we die.

Thus although the average of human faculty may stand at no higher level—may even stand at a lower level—than it did in the days of the Tudors, social evolution still continues, and will still continue so long as that faculty is employed in building up the structure of civilised society. Each generation of builders is working at a higher level and with the better tools their predecessors have devised. The building thus fashioned is the social environment; and the essential characteristic of social progress is that evolution has been transferred from the organism to his environment. This environing social structure it is which persists. It is the product, not of the average intelligence, but of the best thought and endeavor of each succeeding age. But it forms the mould in

which mediocrity is cast. The average intelligence profits by all that human excellence achieves. And though it be true that the level of average faculty is no higher now than it was in Tudor times, yet the level of average acquisition is decidedly higher. If it be not so, then is our education futile. The same average faculty is employed to greater advantage. Four centuries of human progress have given increased facilities for putting this faculty to its most efficient use. Evolutionists have been too ready to take it for granted that the human intellect is still evolving to higher grades of perfection. For this belief there is no sufficient evidence. Not the intellect, but what it achieves has been and is being evolved. If the mediocrities of to-day are richer, intellectually and morally, than the mediocrities of Shakspeare's day, it is not through increased hereditary power of intellect or of will, but from the better opportunities rendered possible by social inheritance. They are not themselves more nobly endowed, but they are heirs to a more highly evolved social environment; they are not themselves inherently brighter, but they reflect the brightness of a more luminous social sky.

If these conclusions be based on sound reasoning, and the assumptions on which they are founded be justified by the facts, we must regard social evolution as proceeding by a method different from that which obtains in the organic nature with which the biologist has to deal. It is a superorganic evolution. But there will probably be some, perhaps many, who will cling tenaciously to older views of the range and importance of heredity. The teacher will protest that we are robbing his office of more than half its value. Our labors are largely wasted, he will complain, if they are restricted to the boys and girls before us, and are doing nothing to raise the level of faculty in the race. But there is comfort in the reflexion that his errors are also limited in their range of influence. We are training a race of examinees; and it is refreshing to think that we are not necessarily cramping the hereditary soul of man. Greater still is the solace we may find in the reflexion that the squalor and vice of our city slums is to a large degree the product

rather of a wretched and distorting environment, than of a debased and vicious hereditary nature.

Huxley said:

"In a large proportion of cases crime and pauperism have nothing to do with heredity; but are the consequence, partly of circumstances, and, partly, of the possession of qualities, which, under different conditions of life, might have excited esteem and admiration."

There is surely hope in the belief, that, in the slums, we see rather the misapplication or the thwarting of the wholesome tendencies which man as man inherits, than the hot-bed of innate iniquity and the spawning ground of hereditary vice. Not that inborn tendencies to evil can be denied or should be overlooked; not that a segregation of the vicious (to borrow a phrase from biological science) does not occur among the outcasts of civilisation. These are facts to be faced. And terribly stubborn facts they are. It is scarcely too much to say that organic heredity is beyond the power of man to alter or to modify. But we may place the child in circumstances which shall afford full scope for the development of all his better innate tendencies and shall thwart to the utmost the maturing of his proclivities to evil. Fortunately man inherits a plasticity, a power of accommodation to circumstances, which makes him the most mouldable of organic products. Fortunately he is "the most consummate of all mimics . . . and there is no such another emotional chameleon." He will take his color from the purer tints of more bright and healthy surroundings. Education, which is (or should be) the art of applying the suitable environment to the growing child at the successive stages of his development, will do much. And we must steadily continue our endeavors to over-master the bestial tendencies bequeathed to man by his brute ancestry, applying to the utmost the well-directed pressure and influence of all that is best and most civilising in the social inheritance which is the legacy of the founders of our common humanity.

Those who find it difficult or distasteful to accept the conclusion that there is no hereditary increment of moral and intellectual power may urge that the mental equipment of the average man to-

day is demonstrably better than that of his predecessors. But everything here depends on what is to be understood by mental equipment. The question is whether he is better equipped by nature or by art. Has he stronger mother wit, or is he better educated? It has been my good fortune to meet not a few artizans whose natural equipment has filled me with admiration. And I have said to myself: "If only these good fellows had enjoyed the opportunity of intellectual development under the guiding touch of all that is best in our social heritage of thought, science, and art, they would have been makers of history in some department of human endeavor. Their natural equipment is splendid; their equipment through the art of education of the rudest and most elementary kind. On the other hand, which of us has not met men of only average natural ability, who have had a training so careful and well-directed, that they have been able to cut a better figure in the world than thousands whose hereditary outfit was richer in promise? It is the natural equipment of the average man that, in Huxley's opinion, is no better now than it was in the days of the Tudors. The richer and more extensive stock in trade of the nineteenth-century city clerk has been gleaned from the stores which have accumulated during four centuries of social inheritance. It is this heritage, not his natural organic heritage, that has increased through the accumulation of intellectual wealth. And if we turn from the average to the exceptional, can it be maintained that there is a higher percentage of men of commanding genius in the decade now drawing to its close than there was during the last decade of the fifteenth century?

Again it may be said that Huxley's assertion that vice is in a large degree due to circumstance and nurture comes perilously near to a denial of the demonstrable efficacy of heredity in the transmission of moral and intellectual idiosyncrasies. But Huxley was lacking neither in common sense nor in practical powers of observation. He would have been by no means the last to proclaim that hereditary tendencies moral and intellectual, good and bad, are undeniable and unquestionable. These tendencies we must accept; for they are, in the existing social system, unalterable by human ingenuity. All that we can do is to prevent, in some degree, the

evil tendencies from realising themselves in act and deed. That upon which our argument is based is not a denial of heredity in man, which would indeed be absurd, but the assumption that human progress is the expression rather of the social inheritance of human achievement than of the progressive improvement of that which is given in organic heredity. And it is claimed that this social inheritance has a wider influence than merely organic heritage. Let us grant that Darwin was an example of hereditary genius. How does the rising generation profit thereby? His gifted sons do indeed inherit no mean share of his great powers. But the whole civilised world profits by his thought. It has enriched the intellectual and moral atmosphere we breathe. It has become part of our social inheritance.

Once more it may be urged that since mankind form the social environment of man, in saying that evolution is transferred from the individual to his environment we are only asserting, in somewhat pedantic phraseology, that the transference is from man to mankind. But our contention is that not mankind but the achievements of mankind form our social environment. Literature, art, philosophy, science, industrial inventions; these are not mankind but its products. These form the atmosphere we breathe. And the analogy may serve to make clearer the essential nature of the transference. It is assumed that the lungs of the mind are no better than they have been for generations, but that the air they take in is richer in moral and intellectual oxygen. If the city clerk to-day has more mental vigor than he who occupied the stool a few generations ago, it is not because he has better lung-power but because more of this oxygen courses through his blood. It is not the lung-capacity but the atmosphere that is being evolved. But since a richer atmosphere brings more vitality, the intellectual vigor of the average man is heightened through the purer and richer air which is his through the social heritage of a more highly evolved environment.

The conclusions which we reach must be stated in frankly hypothetical form, since they are founded on assumptions, which cannot at present be established by adequate statistical evidence.

If, however, we are right in assuming that natural selection plays but an insignificant part in the development of man under the conditions of civilisation; and if we are right in assuming that the biological evidence for the inheritance of acquired increment of faculty is insufficient; it follows that, unless we assume some mysterious and unexplained inherent developmental tendency, the conditions of human progress must be sought in the evolution of the environment of human achievement, and in the influence of this environment on the individual during his period of greater plasticity. One important feature which distinguishes social evolution from the merely organic evolution which we see among the lower animals is the predominant part which is played by the fittest in raising the level of the less fit. This is brought to bear in two ways; first by bettering the environment, and secondly by bringing every individual in the community within its moulding influence; in short by original work in art, science, and industry, and by education. These are the only conditions under which, so far as we know, social progress is possible. And if, as seems probable, the nature of civilised man is undergoing no improvement, it is assuredly all the more necessary that we should do our utmost to improve his nurture.

Such are some of the conclusions we reach when we apply the principles of evolution under the conditions which obtain in the progress of civilisation. But, after all, supposing our analysis to be adequate and our synthesis duly proportioned, have we done more than indicate the nature of the process in terms of related antecedence and sequence? Does not much remain behind unexplained, and indeed inexplicable by science? If even the fall of a stone to the earth, the formation of a chemical compound, the building of a snowflake, present problems which, after they have been submitted to the solvent action of scientific interpretation, leave insoluble metaphysical residues; if the vital processes of the amœba, the subtle changes in the nuclear-skein of the living cell, the development of a fertilised ovum, involve the play of forces which science must either ignore or accept as data from metaphysics; shall we say that the growth of human ideals—those ideals

without which a rational civilisation is inconceivable—melt in the explanations of science and leave no residues to be dealt with by metaphysics? I endeavored to show in my last essay that psychology in its strictly scientific aspect has no concern with the Will, while for metaphysics the Will is the very heart, soul, and essence of mental development, the underlying cause of the sequences which the psychologist patiently studies with a view to the elucidation of the conditions under which they occur. But if civilisation has any metaphysical meaning it is as the embodiment and manifestation of the corporate will. The spirit of the age is for the metaphysician something more than a mere form of words. It is not fashioned by us; but operates in us and through us. It is of us, its children; we are of it, our parent. It includes us, and without us it is incomplete. It is part of the metaphysical basis of our religious conception of God; and through it God is made manifest in man. But with it alone this conception is partial and incomplete. Not only the Force which makes civilisation possible but that which makes all things possible, which affords the data of all scientific inquiry, is the ultimate synthesis of metaphysical thought. It is the underlying Reason which makes any explanation rational. The man of science, as such, can afford to ignore it; he may well be content to accept things as they are, to note the succession of events and express them in splendid generalisations. But the poet cannot thus rest content; and Wordsworth's invocation touches, with some poetic license, a chord which is nowise inharmonious with the music of Newton or of Darwin.

"Wisdom and Spirit of the Universe!
Thou Soul that art the eternity of thought,
That givest to forms and images a breath
And everlasting motion, not in vain
By day or star-light thus from my first dawn
Of childhood didst thou intertwine for me
The passions that build up our human soul;
Not with the mean and vulgar works of man,
But with high objects, with enduring things—
With life and nature—purifying thus
The elements of feeling and of thought,

And sanctifying, by such discipline,
Both pain and fear, until we recognise
A grandeur in the beating of the heart.
Nor was this fellowship vouchsafed to me
With stinted kindness. In November days
When vapors rolling down the valley made
A lonely scene more lonesome, among woods,
At noon and 'mid the calm of summer night,
When, by the margin of the trembling lake,
Beneath the hills homeward I went
In solitude, such intercourse was mine:
Mine was it in the fields both day and night,
And by the waters, all the summer long."

C. LLOYD MORGAN.

BRISTOL, ENGLAND.

THE NEW BIBLE AND THE OLD.

IN REPLY TO PROFESSOR GREEN.

WHEN the editor of *The Monist* extended to me his invitation to report upon the Polychrome Bible, and to acquaint the educated American public with the methods and aims of this stupendous undertaking, he intimated from the very beginning his intention of obtaining a presentation of the case from the opposing side, and of soliciting some representative of the so-called positive theology for the expression of his views in the matter. The announcement that Professor Green, of Princeton, had declared himself willing to undertake this task filled me with the liveliest satisfaction; for Professor Green enjoys with us also a high reputation as an apologist, and his writings on the *Hebrew Feasts* and the *Higher Criticism of the Pentateuch* have long since been translated into German. The editor regarded it as a matter of course that I should then enter the lists a second time in defence and further substantiation of my views; I so promised, and I am now prepared to redeem my promise. But let me say right at the outset that I have no hope whatever of convincing my esteemed colleague from Princeton. The shafts that I or any other man can aim will rattle harmlessly against his mailed breast, and say what I may, it is sure to be "out of sympathy with the teachings of the Bible from beginning to end." But perhaps after all it will not be an altogether bootless and uninstructive task to take this opportunity of explaining again the methods and means by which the biblical apologists and harmonists accomplish their work.

It might appear as if the difference existing between Professor

Green and myself were not a great one. He solemnly repudiates the imputation of being "a foe to biblical criticism"; on the contrary, he is "an earnest believer in the right and the duty of the most thorough and searching inquiry into the origin, the authorship, the trustworthiness and the general character of the books of the Bible. Any light that can be thrown upon these subjects from whatever quarter is to be welcomed." He is also desirous of knowing "the truth and the whole truth"; and he is additionally of the opinion that "the sacredness attached to any volume by ourselves or others is no bar to the most rigorous investigation of everything connected with it." These are principles that the most advanced critics will cheerfully indorse, and in which they will discover their own ideals incarnate. But what are the conclusions to which Professor Green is led by these principles? How does he apply them?

The following paragraph in which Professor Green sets forth the principles of his criticism of the Pentateuch are thoroughly characteristic in this regard. He says:

"If we have trustworthy testimony reaching back to the time when books claim to have been written, and we find that they have been uniformly referred to the date and the author which they assert for themselves, and if moreover they are in accord with their alleged origin and surroundings, we have the strongest possible reason for believing that their statements concerning themselves are true. This is the impregnable base upon which the genuineness of the Mosaic legislation and the Mosaic writings rests. And the speculations of the modern scholars cannot unsettle it."

All this is very well. And if the case actually were as it is here represented we critics should be championing a hopeless cause. But let us look at the facts a little more closely. Granting that we have trustworthy testimony reaching back to the time when the books claim to have been written, when, let us ask, does the Pentateuch claim to have been written? It itself, at least as a whole, never once asserts the claim of having been written by Moses, and even the ancient Church was well aware of this and openly acknowledged it. Junilius Africanus in his celebrated *Instituta regularia divinæ legis* cites the Pentateuch as an instance of a book whose

author was not known *ex titulis et proœmiis*, nor even *ex titulis solis*, but merely *ex traditione veterum*. Nay, the Pentateuch does not even raise the claim to having been written by a contemporary of Moses. In what passages does the author refer to himself as having been an eye-witness? The book is a narrative merely, the author of which never so much as betrays by a single syllable that he is reporting events in which he himself was a participant. And where in the wide world have we so much as a single jot of "trustworthy testimony reaching back to the time of Moses"? At most it can be nothing more than the Pentateuch itself, and that upon the express supposition that the Pentateuch is the work of Moses. And whence, pray, have we obtained our information regarding the surroundings and the time, or regarding the alleged origin? In spite of the clay tablets of Tell-el-Amarna, and in spite of all the excavations of the Egyptologists and the Assyriologists, that information has again been drawn wholly and solely from the Pentateuch on the assumption of its authenticity. In a word, believing on the strength of a tradition which is absolutely unverifiable that the Pentateuch was written by Moses, we construct on the basis of the Pentateuch a picture of the surroundings and the epoch of Moses; and then for the naturally good and sufficient reason that the Pentateuch is in accord with this picture, it is concluded that we possess in this agreement an "impregnable base for its genuineness." If that is not a veritable gem of the *circulus vitiosus*, there was never a science of logic. And I learn with the utmost satisfaction of the admission made by Professor Green that the "genuineness of the Mosaic legislation and Mosaic writings" rests on this base, for in that event we critics have for the present nothing to unlearn.

This is the way the case stands with the "base." Let us now see how it stands with the superstructure. Professor Green's canon reads: "It is only necessary for the reader to put himself in sympathy with the writer to find all plain and natural." Verily, *Difficile est satiram non scribere!* If a person is bent on believing and blindly accepting everything he reads, assuredly there can be no room for contradictions and differences of opinion.

Professor Green censures us critics—for it is the point of view and not the person that is involved—with undertaking "to measure ancient records by modern ideas," whereas it should really be our duty "to apply the standard of the ancient writer." We critics proceed, I admit, on the assumption that a biblical author when he says a actually means a, and in our turn we charge the apologists with applying to biblical things a standard made of India rubber which admits of being stretched or contracted to suit the emergencies of the individual case, with the result that what an author has written as a is sometimes taken to be $2a$ and sometimes $\frac{a}{2}$.

As the first effusion of my subjective bias and of my incompetency to apply biblical standards, Professor Green contests the conclusions which I have drawn from the data given in Genesis regarding the ages of the patriarchs; and he contends that for an author who suffered his characters to live to the age of one hundred and eighty years, seventy-one years, and one hundred years were altogether different periods of time from what they are in the case of men who normally live to be only eighty years of age. But what shall be said to this when it is learned from Genesis xi. 14–17, that Salah, who lived 422 years in all, begot his first son at 30 years of age, and that Eber, who lived 464 years in all, begot his first son at the age of 34? By Professor Green's standard, this would be tantamount to saying that with us a boy of six could become a father.

And is my estimate of Abraham's hundred years really unbiblical? If there was ever a man with a blind faith in the trustworthiness of the Old Testament traditions, it was the Apostle Saint Paul; and has Professor Green never read carefully the Epistle to the Romans? Saint Paul there says, Romans iv. 19, "He considered not his own body now dead when he was about an hundred years old." I take it that the words "his body now dead" are unmistakable. If the Apostle Paul was not competent to measure biblical things by biblical standards, then surely we critics may be excused for not being able to do so.

But the affair assumes a more critical aspect still. Even Professor Green's Moses does not do him the favor of thinking by biblical standards. For what does he himself recount after God

had announced to the ninety-nine year old Abraham the birth of Isaac? "Then Abraham fell upon his face and laughed, and said in his heart: shall a child be born unto him that is an hundred years old?" (Genesis xvii. 17.) Who has reasoned by Bible standards in this case, Professor Green or I? In a word, to avoid being compelled to admit that the narrative in Genesis xxv. 1–4 does not stand in its proper place in our present Pentateuch, Professor Green gives the Apostle Paul, nay even Moses himself, the lie. Certainly, one cannot ask for more. Instinctively the saying of Lessing is suggested to us of the "enchanted œsophagi" of those apologists and harmonists "who are fain frequently to strain at a drop of pure milk and will bolt without wincing pound-weights of flinty pebble."[1]

I have also no conception of the methods of the ancient writers. "The Professor overlooks the common usage of good writers to subordinate exact chronological sequence to clearness of narrative." That the writing of history and the writing of chronicles are two altogether different things I am perfectly aware, as I am also that the pragmatic historian is not always able to adhere mechanically to the exact chronological sequence. But in connexion with what event does Professor Green make his strictures? In connexion with my interpretation of Genesis xxxviii. We read in Genesis (xxxviii. 1) "And it came to pass at that time that Judah went down from his brethren," etc. Now, for a "good writer" "that time" is the time of which he is speaking, namely, in the present case, the time when Joseph was sold into Egypt (Genesis xxxvii. 36). God forfend! replies Professor Green; at that time Judah had long since parted from his brothers, had married the daughter of the Canaanite, Shuah, had had three sons by her, and of these three sons had already lost Er and Onan who had grown to manhood: only "the affair of Judah and Tamar and the birth of her children" came "to pass at that time"; and he who is of a different opinion "overlooks the common usage of good writers." But unfortunately, in all the preceding narratives Judah is reported to

[1] See G. E. Lessing, *Eine Duplik* under *Fünfter Widerspruch.*

be with his brothers: the Judah who in Genesis xxxvii. 12 et seq., was feeding his father's flocks at Shechem and Dothan together with his brothers, had not yet parted from his brothers, had not yet married an Adullamite, and had not yet a flock of his own at Timnath. These are facts, and "the common usage of good writers" is powerless to alter one jot or tittle of them; and the conclusions to be necessarily drawn from them are consequently all substantiated.

The problem presented in Genesis xlvi. is also not so easily disposed of. *Scriptura scripturae interpres*, is an old principle of Protestant theology. When in Deut. x. 22 Moses himself says: "Thy fathers went down into Egypt with three score and ten persons"; when it is narrated in Genesis xlvi. 5–7, that Jacob set forth with his entire household for Egypt; when the list in Genesis xlvi. 8 begins with the words: "And these are the names of the children of Israel which came into Egypt"; when the number of souls in each particular group is given, and at the end seventy souls are obtained as the total, surely one is compelled to assume that the author of this list intended to enumerate the seventy souls of which the migration of Jacob into Egypt was composed. But if the list fails to fulfil these requirements, which Professor Green himself concedes, then to my way of thinking we certainly pay the Bible more respect by assuming that this fragment was the result of an attempt subsequently made to particularise by name the number of souls which tradition had handed down, than we do by entrenching ourselves behind the statement that the list is "substantially accurate" and resting content with the assertion that the persons here named were actual descendants of Jacob, and had actually been in Egypt.

In this I have not mentioned another important difficulty at all. The women too certainly belonged to the "souls" referred to, and verse 7 expressly mentions "the daughters and the sons' daughters" of Jacob along with his sons and grandsons. Nay, the person who has read Deut. x. 22, without reference to Exodus i. 5, would be naturally led to think that the wives also were included in the count, for it is hardly to be expected that the sons of Jacob were all widowers or that they took only their children with

them into Egypt and left their wives behind them in Canaan. And even by the standard of Exodus i. 5 it is scarcely likely that Asher alone of all the sons of Jacob had a daughter; yet besides Dinah, whom from Genesis xxxiv we know to be the daughter of Jacob and of Leah, the list mentions Sarah, the daughter of Asher, only. It seems, in fact, to be the fate of the apologists that they should be bent solely on rescuing the letter by a hair's breadth in the individual case, quite unconcerned as to whether they are not thereby working irreparable injury to other passages. On this point, as a "harmony of waxen noses"[1] Lessing in the connexion above cited has uttered some extremely pertinent remarks.

I have also to number among the apologetic subterfuges of this character, the desperate course which Professor Green takes when, in endeavoring to escape the uncomfortable conclusions of the text, he declares the entire chronological and genealogical conception of Genesis v. and xi., to be "a mistaken interpretation," and would take the words: "Shem begat Arphaxad; Arphaxad begat Salah; Arphaxad begat Eber, etc." to mean: "Shem had a son who was the ancestor of Arphaxad, etc." In doing this, he places himself not only at direct variance with the unmistakably lucid tenor of the text, but also with the entire Jewish and Christian tradition. For granting even the possibility of such a conception of biblical genealogies, still Professor Green overlooks the fact that the two genealogies in question are distinguished from the remaining biblical genealogies by a specifically characteristic mark. Why is the age mentioned each time at the birth of the first-born? Is there any interest, either from the point of view of soteriology or of biology, in knowing how old Arphaxad was at the birth of Salah or one of his forefathers, or how old Salah was at the birth of Eber or one of his forefathers? Surely, no other intention could have been predominant here than that of constructing a consistent and flawless chronology.

Considering Professor Green's rigid adherence to the letter, and the possibilities of interpretation of which the language in

[1] In German "a waxen nose" means generally something elastic and pliable. —*Ed.*

question admits (for the two Hebrew words נער and ילד are really equivocal and indeterminate), I am unable to furnish him positive proof that the Ishmael of Genesis xxi. 14 et seq., cannot be regarded as a young man of seventeen years or that the Benjamin of Genesis xlii to xlv cannot be considered as the father of a family and well along in the thirties. The person who does not feel and believe this, simply does not feel and believe it. But when Professor Green points out that I myself acknowledge Benjamin to have been far along in the thirties at this period, this is of course to be taken as applying only to the chronology of the priestly narrative, and under no circumstances to the expositions of the Jahvists and Elohists.

I am not at all disposed to place so low an estimate upon what the "superficial reader" (I had almost said the unprejudiced reader) thinks on reading the Bible. If, for example, the "superficial reader" of Genesis on reading the passages xxv. 7–10 and xxxv. 28–29,—and these are precisely the passages with which the "superficial reader" is supposably concerned,—should ask how it could be possible that the Ishmael who had long previously been cast forth from his father's house, and was dwelling in the desert on the boundary of Egypt, and the Isaac who had long previously taken up his habitation in Beerlahai-roi, should suddenly make their appearance at the burial of Abraham in Hebron, I should be exceedingly curious to know what reply Professor Green would make to the question.

And while we are upon the Pentateuch, I shall dispose of the remaining problems at issue here, at once.

Considering the facts (and I take but one instance from many) that in Deut. xviii. 3, the shoulder, the two cheeks, and the maw of the offerings are exacted as the portions of the priests, and in Exodus xxix. 27 et seq., Leviticus vii. 32 et seq., x. 14 et seq., Numbers vi. 20 and xviii. 18, the right thigh and the breast are exacted, I for my part am quite content to abide by the "confusion and error" which arise from assuming "separate strata" in the legislation.

My indignation at the Jacob of Genesis xxx. and xxxi., thinks Professor Green, is directed to the wrong place. It is quite true

that Jacob commits his real offense in Genesis xxx., and it never occurred to me to attempt to palliate it. Nevertheless, I can understand it quite well as a step taken in self-defence in the struggle against the wiles and treachery which Laban had so uniformly practiced toward Jacob. The shocking feature for me is contained in the hypocrisy of Jacob's account in Genesis xxxi. But Professor Green thinks I "miss the very point of the whole narrative" in so doing, for though in point of fact Jacob had uninterruptedly carried on his fraudulent manipulations with the rods, and had accomplished by this means the end that he sought, an angel afterwards appeared to him in a dream, and informed him that his successes were not due to the peeled rods but to "divine interference in his behalf"; and thus he is "cured of his error," and can say to his own wives with a clear conscience: "God hath taken away the cattle of your father and given them to me."

The first consideration that I should adduce here in reply to Professor Green is, that from a strictly theistic point of view nothing whatever takes place without "divine interference,"—the purely mechanical action of natural law or forces is deistic not theistic,—so that ultimately every criminal might legitimately justify his conduct by saying that God did it. The question is simply this: does the story of Genesis xxx. 37 et seq., itself impute the result effected to Jacob's peeled rods, or not? And on this score I am fortunately in the position to appeal to an authority in which Professor Green is certain to repose more confidence than he does in me. I possess a copy of the official edition of the English Bible, printed by the British Bible Society, which gives at the head of each chapter a brief synoptic statement of the contents. And what do we read here in the case of Genesis xxx? "37 Jacob's policy whereby he became rich." Even for the official Bible of the English Church, then, (in my copy I find on the title-page the words: "Appointed to be read in churches,") the peeled rods of Jacob were actually the means by which his vast holdings of cattle were obtained; and on the assumption of the unity of Genesis there is no escape from the conclusion that the speech in Genesis xxxi. 5–9, is an infamous piece of hypocrisy.

I most emphatically protest against the assertion that the partition of the sources is injurious to what is essential and important from a religious point of view in the Bible. Professor Green instances the life of Abraham. Now, what is there in this story that is exemplary and dear from a religious point of view? That Abraham has implicit trust in God, that he yields implicit obedience to God, that amid the most harassing circumstances, in trials and tribulations, in temptations and doubt, nay in defiance of all human probability, he never once loses confidence in God and his promises, and so is ultimately made the recipient of the divine blessing. But that is precisely the important point with the Jahvists and the Elohists also, taken by themselves: the priestly narrative, however, furnishes on this head purely chronological statements, which are perfectly indifferent from a religious point of view. It is absolutely valueless from a religious point of view to know how old Abraham was when the various single events of his life took place, and how many calendar years his probations lasted. I can as little believe that the story acquires its entire "beauty and impressiveness" from these facts as I can that the story of the resurrection of Jesus would be enhanced in value by our knowing exactly how many hundred weight and fractions thereof the stone weighed that lay before the sepulchre of our Lord.

One brief word as to Joshua and Samuel. "When all the people were passed over Jordan, the Lord spake unto Joshua, saying: Take twelve men out of the people. . . . And Joshua said unto them: Pass over before the ark of the Lord your God into the midst of Jordan." So runs the passage in Joshua iv. But the ark of the covenant had passed over into the Jordan before the people, and had been set up in the midst of the river; and it was not until afterwards that the Israelites "passed over on dry ground, until all the people were passed clean over," as reported in Joshua iii. The mere statement of this fact is sufficient to refute Professor Green's declaration that "it is hard to see how any intelligent reader can find difficulty here, or what advantage can be derived from splitting this plain and consistent narrative into two conflicting accounts."

I am quite well aware that everything can be explained by

"immediate divine intervention," but what reason can Samuel have, in 1 Samuel x., for causing lots to be cast at all? Was the casting of lots the only method of electing a king? Would not Israel have accepted his mere word,—the word of "the true prophet of Jehovah,"—that Jahveh had in the meantime given him a token that Saul was the right man for the place?

And the Saul of 1 Samuel xi. is the formally elected, solemnly acknowledged king of Israel, who is greeted with loud rejoicings by his people? Let it be granted even that the messengers from Jabesh had proceeded only to Gibeah and had stated their purpose of seeking help in all the coasts of Israel, in order to deceive the Ammonites regarding the fact that Israel, like the other nations, now also had a king. Why, on this supposition, did they not ask for the king immediately on arriving in Gibeah; and when finally Saul actually makes his appearance, why do they not hasten towards him with the supplication, "Help, O King!" (Compare 2 Samuel xiv. 4, and 2 Kings vi. 26.) But Saul is first constrained to ask why the people weep, and the people then tell him the tidings of the men of Jabesh. Is this the fashion in which ambassadors execute their commission to a king, even among the most primitive peoples?

And now as to Chapters xvi. and xvii. The armor-bearer, the personal adjutant of the king, betakes himself to his home, remains away so long from the court that he is completely altered in appearance, does not return to his post on the breaking out of war to accompany his king to the front, but loiters about on the outskirts of the camp with the intention of visiting his brothers, by whom he is savagely upbraided as having come for the mere idle purpose of witnessing the battle, and as having had no business whatever with the army. And this same person represents himself to the king as a man who had never borne sword and armor, so that it would seem as if the two were designedly playing at hide-and-seek with each other. But of course everything is possible with Saul, for his disorder was an incalculable one, and in the case of a man who is absolutely irresponsible for his actions one is not supposed to be surprised at anything, not even at what transcends the bounds of reason. I had, I admit, not thought of "how far Saul's malady

might have affected his memory," but it is a question not of Saul alone but also of that mentally and physically sound man Abner, who as the commander-in-chief of the army could not have helped knowing the personal adjutant of the king. For even Abner himself says: "As thy soul liveth, O King, I cannot tell." Is it possible that in the short space of time during which the kingdom existed that honest and stout-hearted old warrior, Abner, could have developed into so consummate a Polonius as to affirm by a solemn oath that the cloud which the king in his insanity declared to be a camel was in reality a camel!

And how does Professor Green explain the difficulty of fact involved in 1 Samuel xvii., namely, that according to the express statement of 2 Samuel xxi. 19, the giant Goliath of Gath was slain in the wars with the Philistines during David's reign, by a Bethlehemite named Elhanan? And has it never been a source of difficulty to him that the Greek Bible in 1 Samuel xvii. and xviii. has left out entire passages? And as to my "splitting" of the books of Samuel, sufficient proof that I have made nothing that is either injurious or inconsistent out of them will doubtless be furnished by my portraiture and characterisation of the two first kings of Israel in my *History of the People of Israel.*

Professor Green is pleased to see that I entertain no Utopian ideas of the Rainbow Bible. I must decline with thanks all congratulations on this score, for that is something no man of science would do. When he complains that the Rainbow Bible does not represent the opinions of the school, but only those of the individual collaborators, it is to be remarked that scientific schools are not like regiments, in which every man wears precisely the same uniform, or like monastic orders, in which every individual is bound to precisely the same rules. Where they are such, they have missed their purpose and are unworthy of science, the very life of which is freedom, and in which no other person can think for us, but every one stands on his own footing. That which unites the schools is merely the sameness of their methods, and the agreement of their fundamental conceptions. The talent entrusted to him each one has to put out to usury on his own account, that it

may increase and be productive of gain. Scientific work is undertaken only by those who believe they have something distinctively their own to offer, something new; by persons, in short, who believe themselves able to advance science. He who rechews the cud of what the school has already said, is like the slothful servant who hid in the earth the talent entrusted to him. Every scientific work, therefore, is in some measure subjective, because even the man of science can say only what he believes to be true. That person has done his whole duty who has honestly aspired for the truth, and investigated it according to his powers. On this point, too, we have a superb utterance from Lessing: "Let every man speak out what *seemeth* to him truth, and *the truth itself* may be commended to God!"

Green's comparison of the Rainbow Bible to a map is exceedingly clever; but are we to cease making maps because the boundaries of countries are liable to change? One could never write a text-book on this principle; for every scientific text-book is liable to become antiquated over night through some new and unexpected discovery.

I concede too that the Higher Criticism is liable to error and that it actually has erred. But a man who would for that reason abjure criticism altogether is like a person who would refuse to use railways because trains are liable to run off the track. Science, too, is a gift of God,—one of the three, religion, art, and science, which first make men of men, and form the foundation of their commanding and God-like position in nature. Even the gifts of God may be misused; but that we should use them to the honor of Him who has given them, that is His will. We critics seek the honor of God by our work on the Bible. The Bible is to us a document of religious history, the collection of the records of His revelation to humanity, which we honestly strive to understand, and to understand further simply as historical religious records; we seek to bring them to utterance, and we hearken to their utterances with the most affectionate devotion. Only, we believe that in these records written by men for men, God spoke to us in the language of men. They are venerated and sanctified for us, yet at the same time they are like dear friends, who feel with us and with whom

we feel, whom we cherish and to whom our relations are personal and heartfelt. The apologists, on the other hand, make of the Bible a fetish, to whom sacrifice upon sacrifice must be made, and whose features can inspire only fear: but "there is no fear in love, but perfect love casteth out fear" (1 John iv. 18). And that the Rainbow Bible has the power and the mission to promote this "perfect love" without fear and to diffuse it broadcast over the world, I am certain; and so let it go its way ' by honor and dishonor, by evil report and good report" (2 Corinthians vi. 8), and find entrance to right many hearts who will accept with joyful gratitude the divine truth whenever offered to them in plain and intelligible form.

BRESLAU, November, 1899. C. H. CORNILL.

POSTSCRIPT.

The sad news of Professor Green's death has just this moment reached me. I have assuredly no need of saying that my article would have taken a different form, could I have forefelt or known in any way of this sorrowful event. Professor Green has now passed away, passed from believing to seeing. He knows that there has never been a thought on my part of combating him personally; that I have written simply in defence of a cause which to me is a sacred one, and of which I have felt myself a chosen advocate; and that I did so, merely in order to repel an attack which in spite of the utmost recognition I can give of the rectitude and probity of my opponent, I could not leave uncontested. Professor Green, now that he has been taken from this earthly life, as well understands and appreciates my position as I have always understood and appreciated his. With heartfelt sorrow, I lay a wreath on his new-made grave: for he battled manfully for a conviction that was sacred to him, that is sacred to many millions and will remain so for a long time to come. Not that which a man has done constitutes his worth before God, but that which he has desired to do and the manner in which he has done it. And Professor Green's endeavor was pure and his deed stainless.

BRESLAU, February 17, 1900. C. H. C.

LITERARY CORRESPONDENCE.

FRANCE.

THERE lie before me three important works treating sociology or history, which I am glad to be able to group together because the criticism of each will be illumined by the presence of the others. I shall begin with that of M. AD. COSTE, *Les principes d'un sociologie objective.*

M. Coste is vigorously opposed to the popular doctrine of the day which tends to confound sociology and psychology. He makes a sharp distinction between the facts of sociology and the facts of psychology,—for instance, moral, æsthetic, etc.; the latter in his mind constitute a distinct and ultimate science, ideology, which would be built upon sociology, instead of preceding it.

In order to achieve this separation he has deemed it necessary to establish two points in advance: that ideologic phenomena are of a different order from sociological phenomena, and that there is no evident correlation between the two. This thesis is open to discussion, as it seems to me, at least the second part of it, though this does not prevent me from recognising that certain authors, Taine, for example, exaggerated the extent and the nature of this correlation, or failed to understand it properly. M. Coste declares that sociality is a condition precedent of mentality; he even assigns to "opinion[1]" an essential value in the functions of society, no less than to government and production. Now if we take the trouble to analyse carefully this "social condition" of mentality, shall we not

[1] That is, *croyance*, or the sum-total of ideas common to the individuals of a nation.

finally discover vital and perhaps constant relations between a given social state and the intellectual manifestations revealed in it, of which "opinion" is but one aspect? And if it is also true that these manifestations can often be traced to a general, or superior, evolution, going on outside of, and as it were above, individual societies, must they on that account be regarded as exempt from the investigation of sociology? Granted that its principal task—and M. Coste admits it to be so—consists in showing how the various series of social facts vary in function, it is not clear why the series of intellectual phenomena would not be studied from this point of view, and their exclusion from the domain of sociology does not seem to be adequately justified by the danger we would be in of exaggerating the importance of their influence upon social life, which is as unquestionable as their dependence. It was not necessary, in my opinion, to deny the correlation of intellectual facts and social facts in order to separate sociology from ideology. The latter maintains its independent existence in the midst of the former by right of its results—such as "opinion," of which the author discourses,—not by its theoretical discipline. As for the strictly psychological theory of religious, moral, æsthetic, or scientific facts, it pursues an object which no more concerns sociology than does the object of individual or general physiology.

The second characteristic feature of M. Coste's doctrine is that it brings into relief an objective social fact, that of population, which here assumes a new and important rôle. He regards it as the social motor, in other words, the dominant fact, on which in the last analysis depend government, "opinion," production,—"the fundamental and initial phenomenon" in the midst of every people, which will determine its "progressive diversification."

The importance of population is not to be denied, and M. Coste is justified in emphasising it; at the same time he supports it with serious evidence. But I should hesitate to accept it as a factor of absolutely primary importance; and, while the fortune of a people depends on its population, the condition of the population is not for all that a fortuitous circumstance without connexion of any kind with habitat, national character, or last of all, with profound ethnic

qualities. Suppose the population of Spain to be transported to England and distributed there in the same limits and conditions that the Anglo-Saxon genius has established, what would be the result? Does density of population bring about the same results in China and in Belgium? Similar suppositions, which could be extended and stated further, reveal an unknown quantity in our problem. I do not hesitate to add that "moral causes," summarised by M. Coste under the head of "opinion," have also had, at least in certain stages of history, a greater importance than he concedes to them. And in the situation to-day of France and England respectively, population does not seem to me to express the predominant phenomenon. Hence I judge that it is one factor among others, the correlation of which with the various social manifestations should be studied with care; but I would not attribute to it such a decisive rôle and so decidedly privileged a rank.

Is it indeed really essential to the constitution of a positive sociology to make progress dependent on the succession of intellectual states, with Comte, or on the occurrence of men of genius or on the discovery of the arts and technical processes, with MM. Tarde and Espinas, or finally, on the objective reality invoked by M. Coste? I think not; and in any case, whoever desires to formulate this "essential determination of social evolution" of which he speaks, must certainly look beyond the element of population. But then we approach a problem of general philosophy, and no longer one of sociology proper.

* * *

M. TARDE is still the protagonist of the psychologic theory combated by M. Coste. I am sorry that he did not take the trouble to include a *résumé* with his new book, *Les transformations du pouvoir*, and I wish that the style of it were more precise. He has undertaken here to show the application of his general doctrine to the governmental side of society; he has tried to explain the changes of political conditions by means of the laws of imitation, repetition, and opposition, and to derive these changes from individual considerations, which are in his view the true matter of history.

Cournot conceived historical development as an order achieved

in disorder, as the harmonious assimilation of a series of chances grafted one upon the other; but M. Tarde thinks that he failed to recognise their proper nature, which is that of individual initiatives. As for the regular or co-ordinated side of social facts, he thought he found it in certain vague general tendencies, whereas, according to M. Tarde, regularity appears strikingly only in the minor details of the facts of social life, "in those almost identical repetitions of perfectly similar acts and ideas which, starting from a given initiative radiate in all directions, colliding or combining with different rays emanating from other centers."

No one will deny that the individual is, in the last analysis, the social motor. But does it follow that psychology can offer a substitute for sociological investigation, as I have often attempted to define it in these pages and even in this very article? When it is said, for instance, that power follows property, this is the expression of an objective relation, and the establishment of such a fact has a value in practice as well as in theory. It is an entirely different matter to derive from this, as does M. Tarde, the rôle of imitation, and to mark the accession of inferiors to power by the psychologic trait, that "they are more closely assimilated to their masters by imitating them." This trait concerns the moral mechanism of the operation, but it does not appertain to it as a political fact.

Furthermore, M. Tarde criticises, somewhat briefly, the established relations of property and power. While it is difficult—we will admit it—always to connect the changes in political form with the modes of possession of soil and capital, it remains true none the less that the hypothesis is not without foundation; and since there is no doubt, as he himself declares, that "if property had not evolved, the evolution of power would never have taken place," it is no less certain that the correlation which we discover in the whole must find expression in the details. In any case, I choose this example only to mark the difference between the study which seems to me to be genuinely sociologic and that to which M. Tarde claims to reduce sociology.

When the author devotes himself to showing us that there ex-

ists "an inverse relation between the political or social influence of the nobility and that of the cities," and that "patriciates decline in proportion as great cities arise," it appears that he is dealing with sociology exactly as we understand it. Let such a relation be disproven, and even then sociology will have a sufficient result independently of the interesting reflexions that may be offered by psychology on the private condition of the individual molecules which make up these social combinations. I note in passing that in the remarkable chapters on Nobility and Capital, M. Tarde is very sparing of psychologic explanations. And if he had explored all the sentiments that move the heart of man in the situations which he describes, what more would we know of these situations themselves considered as social phenomena?

I restrict myself to these few remarks. They do not prevent me from recognising the author's qualities of sagacity and keenness, and I feel that I ought to commend many pages of his book, especially those in which he interprets the law of "progressive differentiation" of powers, or of works, a law which seems to him to mean a division of powers leading to closer solidarity and coöperation; those in which he treats of the increase of authority in modern society; and finally—the practical conclusion of his studies—those in which he shows the necessity and the possibility in the near future of subordinating politics to morals.

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M. D. Xenopol, professor in the University of Jassy (in Roumania), publishes in French *Les principes fondamentaux de l'histoire*,[1] and I shall make this important work the occasion for discussing the question of the relation of sociology and history, whence come many misconceptions. Moreover, it is the very question treated by M. Xenopol. His criticism is based upon the contrast presented by the facts of co-existence (chemistry, psychology, etc.) and the facts of succession (geology, linguistics, etc.), as well as upon the different value of the results obtained in these two groups of facts.

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[1] Paris, E. Leroux; 1899.—Works which appear without publisher's name belong to the Libraire Alcan.

I cannot enter here into the details of the discussion. It will be sufficient to say that, according to M. Xenopol, the historical sciences do not aim to establish relations of similitude and coexistence, as do the other sciences, but, on the contrary, relations of difference and succession. These last-mentioned relations are not laws properly so called, that is to say, the expression of a regularity which is independent of time; and if there are "abstract laws of succession" they are incorporated in "circumstances" which are not "permanent," but always "changing," which modifies the conditions of the problem. In brief, M. Xenopol accepts a static sociology, which is limited to what he calls the "laws of manifestation" of the social facts,—in other words, to the study of the relations which may be discovered at any given moment between events and institutions. But history has the sole right to attempt to establish "regularities in succession"; and these regularities are never the "generalisations of succession" proposed by dynamic sociology, from which are eliminated the "differences" which are the characteristic of historical development; they appear only under the form of historical series, which "always remain unique and individual, unlike in space as well as in time, and consequently have not the character of laws."

M. Xenopol seems to me to fall into confusion. He is filled with the necessity which is imposed upon the historian of (if I may venture to use the expression) localising and individualising human actions; but he commits the mistake of trying to subject the processes of sociology to the necessities of narration. He does not take into account the fact that the conception of sociologic series is as legitimate as that of historical series. These sociological series, these partial evolutions in the intellectual order, the economic order, the juridicial order, the political order, etc., present this especial characteristic, doubtless, that their chief features are most frequently realised in different historical series. But why should the sociologist be forbidden to mark these features and these evolutions across the course of history? Does not the historian find himself constrained to neglect in his account certain "differences" which he regards as secondary? M. Xenopol himself

advises "selecting" those facts alone which deserve to be considered from among the mass of those which constitute the past of humanity. The sociologist does precisely the same thing when he establishes his sociological series. And if, for instance, the transition from polygamy to monogamy seems sufficiently substantiated in the majority of historical series, the announcement of this fact will have for him all the necessary reality without the need of noting the number of wives permitted by the laws of the various nations which practised polygamy. On the other hand, in the special study of the civilisation of Islam it will be important to note the fact that the Prophet of the Mussulmans reduced to four the number of wives allowed to the faithful. By this fact history seems to me to be definitively the concrete part of sociology; it would lose its peculiar physiognomy as soon as it tried to assume another task.

I have not the least intention of disparaging history by this remark, and I concede that it even has an important function of its own: I mean the discussion of events, the appreciation of historical personages, the estimate of their personal influence upon the course of the national life, etc.,—a work of literature and criticism in many respects, a sort of half fictitious reconstruction of reality, which on the whole assumes a real value only in the hands of the historian who is at the same time a philosopher. M. Xenopol certainly has this qualification, and he gives the best of advice on the difficult art of revealing and criticising the facts of history. But he himself furnishes an example of the extent to which the judgments of the mere historian are uncertain and debatable, when he attributes the fall of Napoleon to the play of chance, the winter of 1812. The sudden death of Pericles, stricken by the pest which was spreading from Asia to Greece, was a matter of chance. But Napoleon, despite his genius, was a player who always ended by losing to the bank conducted by destiny.

* * *

I had intended to speak quite fully of a work by M. PAUL LACOMBE, *De l'histoire considérée comme science*,[1]—a work which dates

[1] Hachette & Co., publishers.

from 1894, but the analysis of which is in place here, because it contains doctrinal views that are shared or opposed by the sociologists whom I have just been discussing. I would gladly have noted the personal views of the author on the subject of imitation; gladly have given a *résumé* of his discussion of contingency and determinism in matters historical, that is to say, the degree of certainty permitted by accidental or narrative history, or, in short, by the history of events; gladly have examined his objections to the notion of race; have emphasised, finally, his conception of progress, quoting his wise warning against trusting in the existence of a lucky fate which will carry us forward by itself. But I must ask pardon if I merely refer to his excellent book, without examining it in detail as I would have liked to do. If I do not accept all his conclusions without reserve, I can recommend every page of it as instructive and never dull.

I shall restrict myself to mentioning now the following works:

By the same M. Lacombe, an *Esquisse d'un enseignement basé sur la psychologie de l'enfant*,[1] a very good book which may interest American or English readers, although addressed especially to French teachers, being a controversial work, a protest of common sense against the dogmatic instruction which still holds its fell sway in France;—by M. EUGÈNE D'EICHTHAL, *Socialisme et problèmes sociaux*, studies written with great good sense, their common object being to analyse the various forms assumed by contemporary socialism since the expansion of universal suffrage;—by M. OSSIP-LOURIÉ, *La philosophie de Tolstoï*, a meritorious work in which the author attempts to present the ideas of the celebrated writer in a coherent whole;—by M. H. LICHTENBERGER, *Friedrich Nietzsche, aphorismes et fragments choisies*, a well arranged collection;—by M. FÉLIX THOMAS, *Morale et éducation*, a hasty examination of the recent systems of ethics, undertaken with the purpose of estimating the influence which each may have in the education of children.

LUCIEN ARRÉAT.

PARIS.

[1] A. Colin, publisher.

CRITICISMS AND DISCUSSIONS.

'A STRANGE ATTACK ON SOME PHYSICAL THEORIES."

Under the above quoted head, in *The Monist* for January 1900, Antonio Llano criticises an article by the present writer which appeared in *The Monist* for October, 1899. Mr. Llano does not discuss the contentions of the article which he criticises; but, after the manner of some controversialists, attempts to discredit the conclusions by apparently absurd conclusions drawn from the premises assumed. His article is devoted to showing that certain theories "are not original with Mr. Chase"; to pointing out "Mr. Chase's great error"; to waving aside, without argument, the "conclusions from formulas the exact meaning of which does not seem to be very clear to him" (Mr. Chase); and to animadversions on matters in regard to which "Mr. Chase seems to be somewhat confused."

In the article which Mr. Llano criticises I am somewhat at fault for not stating that formulas (4), $M=\frac{1}{2}(m+m')(v+v')$, and (6) $E'=\frac{1}{2}(m+m')\frac{(v+v')^2}{4}$, are not general, but particular cases of the general formulas which answer the same purpose in argument and have an advantage over the somewhat involved and complicated general formulas. These formulas, (4) and (6), are true only for the particular case of collision of bodies of equal masses, the case of $m=m'$. The general formulas would be, $M=(m+m')v''$, in which v'', the velocity of motion after impact, is, in magnitude, $\frac{mv+m'v'}{m+m'}$; and $E'=\frac{1}{2}(m+m')v''^2$, in which v'' is also, in magnitude, $\frac{mv+m'v'}{m+m'}$. Mr. Llano need not to have transformed the formulas to draw his conclusion that the bodies must be equal in mass, or weight; a simple inspection would have told him that.

So Mr. Llano's deduction from "'generalised' formula that all the bodies in the universe have either the same mass or the same velocity, or both the same mass and the same velocity," is a bit of sarcasm which has its fangs drawn as soon as we learn that the formulas were assumed for bodies of equal mass and moving in the same line of motion in the same direction.

Mr. Llano's "equally interesting and astounding conclusion" drawn from the formula, $E'=\frac{1}{2}(m+m')\frac{(v+v')^2}{4}$, upon which he comments facetiously, falls innocent of any damage to the argument which he seeks to discredit. In fact, the for-

mulas are rigorously true, limited to the particular case above stated. Mr. Llano should show how it is possible for both energy and motion to be conserved, on the theory that all energy is but matter in motion, rather than resort to the sophistical method of drawing attention from the main contention by seeking to deduce absurd conclusions from an adversary's premises.

In concluding his facetiae on formula (6) he says: "This 'Law' can be applied in 'practice' with most wonderful results. Thus, a 10,000-ton man-of-war, hit from beneath by a bullet weighing 2 or 3 ounces, could easily be hurled into the air with a velocity of 1000 feet per second."

I will not comment upon this statement further than to say that this "wonderful conclusion" is quite a vagary of Mr. Llano's imagination, and is as irrelevant to the question at issue as the animadversions of Mr. Dooley upon war, literature, and philosophy.

Again he says: "Mr. Chase further concludes, from some simple mechanical formulas the exact meaning of which does not seem very plain to him, that 'it is evident that kinetic energy is not wholly dependent on matter and motion.' Mr. Chase will not, we hope, accuse us of promulgating 'errors' and 'absurdities' if we tell him that *by definition*, kinetic energy is energy due to motion; indeed the term is often defined by mathematicians as a name given to the product $\frac{1}{2}mv^2$. What would a mechanician say to any one who told him that the velocity of a moving body does not depend upon time and space?"

In this instance also Mr. Llano has drawn an irrelevant conclusion. It is true that there can be no kinetic energy without motion; but the contention is that "kinetic energy is not wholly dependent on matter and motion," not that it does not depend on motion. The contention is that a factor which I will term "mass," or "inertia," is lost sight of in the formula as generally understood, and that this factor is involved in the term m; that what is commonly designated "mass" is really made up of two factors, the amount of matter and the "mass" as defined by J. Clerk Maxwell. On the theory that kinetic energy is wholly dependent on the amount of matter and the amount of motion, will Mr. Llano explain why two pound weights moving over a unit space in a unit of time have only half the energy of a one pound weight moving over two units space in a unit of time—the second case having but half the amount of matter and the same amount of motion as the first case, yet yielding double the amount of energy? This explanation will count for much more than conclusions drawn from arbitrary definitions. And it will not be out of place here to call attention to Mr. Llano's error in stating the formula for the energy of two inelastic bodies after collision. It is not $E - \frac{1}{2}\frac{mm'}{m+m'}(v-v')^2$, as Mr. Llano states, but is accurately expressed by the more complicated formula, $E' = E - \frac{1}{2}\left[m\left(z - \frac{mz+m'z'}{m+m'}\right)^2 + m'\left(\frac{mz+m'z'}{m+m'} - z'\right)^2\right]$. For a full discussion of which subject, consult Thomson and Tait's *Treatise on Natural Philosophy*, Vol. I., pages 319-327.

Again Mr. Llano objects to the argument drawn from the parallelogram of

forces, saying that the resultant would be a parabola and not a straight line, in case of a force impressed at right angles to the line of motion of a particle. His statement would be true in case of a force gradually impressed in a direction constantly parallel to a normal to the original line of motion of the particle. But if the forces are impressed simultaneously on the particle and in lines at right angles to each other; or in case of a particle moving uniformly in a straight line and the instantaneous impression of a force at right angles to the line of motion of the particle—the impression of an infinite force in an infinitesimal period of time—the resultant is a straight line, the diagonal of the parallelogram of forces. In either of these cases the kinetic energy of the particle would be changed. It is, of course, true that, given a particle moving uniformly in a straight line and a force be impressed upon it continuously changing in direction so that the line of direction of the force shall be constantly normal to the line of motion of the particle, it would move with unchanged velocity and energy in a circle, an inwinding spiral, or an outwinding spiral, as the force is constant, increasing, ar decreasing. This, however, is a particular case of a general problem.

If Mr. Llano, or any other defender of the proposition, for that matter, wishes to defend and maintain the position, "that all phenomena can be reduced to matter and motion," it will devolve upon him to explain away the difficulties pointed out in the article of October 1899, in *The Monist*, under the heading, "The Doctrine of Conservation of Energy in Its Relation to the Elimination of Force as a Factor in the Cosmos." His article in the January *Monist* has not even touched upon, to say nothing of removing, the difficulties in the way of the proposition above stated.

CHAS. H. CHASE.

ITHACA, MICH.

BOOK REVIEWS.

HISTORY OF MODERN PHILOSOPHY IN FRANCE. By *Lucien Lévy-Bruhl*, Maître de Conférences in the Sorbonne, Professor in the École Libre de Sciences Politiques. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co. 1899. Pp. 500. Price, $3.00 (12s.).

M. Lévy-Bruhl has given us in this handsome and inspiring volume more than a history of French philosophy; he has given us a history of French thought. "Is it not," he asks, "too narrow a conception of the history of philosophy to see in it exclusively the logical evolution of successive systems? Doubtless this is one way of looking at it; but we can understand, also, that philosophic thought, even while having its especial and clearly limited object, is closely involved in the life of each civilisation, and even in the national life of every people. In every age it acts upon the spirit of the times, which in turn reacts upon it. In its development it is solidary with the simultaneous development of the other series of social and intellectual phenomena, of positive science, of art, of religion, of literature, of political and economic life; in a word, the philosophy of a people is a function of its history.... It is proper, therefore, to introduce into our history of modern philosophy in France, along with the authors of systems distinctly recognised as such, those who have tried under a somewhat different form to synthesise the ideas of their time, and who have modified their direction, sometimes profoundly. Would that be a faithful history of philosophic thought in France which should exclude, apart from the names cited above, those of Montesquieu, Diderot, Rousseau, and Joseph de Maistre? The question is not, as it seems to me, whether they should have a place, but what that place shall be? The reader will see that we have not been satisfied to take half steps, and the question has been settled in this volume in the most liberal spirit."

The book begins with Descartes, who opened a period in the history of philosophic thought, not simply for France, but for the world at large, and we are then led pleasingly along in a charming and appreciative review, abounding in original *aperçus* and acute criticisms, of the works and intellectual environment of Malebranche, Pascal, Bayle, Fontenelle, Montesquieu, Voltaire, the Encyclopædists, Rousseau, Condillac, Condorcet, the Ideologists, the Traditionalists, Maine de Biran, Cousin,

Auguste Comte, Renan, Taine, together with a vast number of subsidiary thinkers. It is mathematics, that, according to Lévy-Bruhl, is the peculiar signature of French philosophy; in nearly every case the studies of the great philosophers began with geometry and analysis (think only of Descartes, Pascal, Malebranche, Fontenelle, D'Alembert, Condorcet, Comte, Renouvier, and Cournot); and hence its predilection for "clear ideas," for "methods," and for deduction as the mode of philosophic procedure. The French philosophers have not been original metaphysicians; they have excelled rather in the philosophy of the sciences, in moral philosophy, and in the theory of classification. Moreover, they have been eminently practical, popular, and unnational, and have appealed to all mankind.

In fine, says the author, "there has been in French philosophy for three centuries a singular persistency of the Cartesian spirit; whether the stamp of the first great modern philosopher was indelible, or whether—which is more likely—Descartes expressed in his doctrine the essential features of the French genius, which caused his influence to co-operate with the tendency of the national temperament. This spirit, which had become predominant by the end of the seventeenth century, was transmitted in the eighteenth through Fontenelle and Montesquieu, prevailed among the 'philosophers,' and even in Condillac, and spent itself in the French Revolution, to be revived in the nineteenth century, modified, but still recognisable, in Auguste Comte. This spirit was wonderfully adaptable to the task of criticism incumbent upon modern philosophy when once out of the Middle Ages and past the Renaissance and the Reformation. The main object was to definitely separate scientific or philosophical speculation from theology, and to overthrow the entire body of institutions based on a historical tradition which was often indefensible, in order to establish in their place a just system. To this work French philosophy was peculiarly adapted by reason of its rational, universal, and humane character, and of its insistence upon logical clearness."

M. Lévy-Bruhl has not neglected living philosophers, and his brief résumé of "the contemporary movement" in French thought contains much information that can scarcely be found elsewhere. All in all, his work is one that appeals as much to the reader of history and literature as to the student of philosophy; it is the story of the development of a great nation's thought, excellently conceived and admirably executed. The intrinsic attractiveness of the book has been greatly enhanced by the bookmaker's art, and its human interest has been heightened by the addition of twenty-three handsome photogravure and half-tone portraits, some of them quite rare. A practical bibliography of works on French philosophy has also been added.

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THE THEORY OF THE LEISURE CLASS. AN ECONOMIC STUDY IN THE EVOLUTION OF INSTITUTIONS. By *Thorstein Veblen*. New York: The Macmillan Company. 1899. Pages, viii, 400. Price, $2.00.

It is the purpose of Mr. Veblen's work to "discuss the places and value of the leisure class as an economic factor in modern life." The institution of the leisure

class, according to him, is found in its best development at the higher stages of the barbarian culture, as in feudal Europe and feudal Japan. It is here that those "invidious distinctions" between classes and employments and that "animus or spiritual attitude" on which the institution of a leisure class rests are seen to their best advantage. The leisure class emerged during the transition from primitive savagery to barbarism. The conditions necessary to its emergence were: (1) a predatory habit of life, and (2) sufficient ease of subsistence to exempt a considerable portion of the community from the routine of labor. In societies distinguished by these two attributes, aggression becomes the accredited form of action. The obtaining of goods by other methods than seizure is accounted unworthy of man in his best estate. No employment and no acquisition is morally possible to the self-respecting man at this cultural stage, except such as proceeds on the basis of prowess, viz., force or fraud. Labor acquires a character of irksomeness by virtue of the indignity imputed to it. The ethics and public opinion of the community at this stage are but the natural and logical expression of these views. "Honorable" connotes nothing but the assertion of superior force, a "honorific" act is a successful predatory act; and the predilection shown in heraldric devices for rapacious beasts and birds of prey is merely the survival of the dominant spirit of this period. The taking of life, the killing of formidable competitors, whether brute or human, is the most "honorific" of all the acts of man, and "this high office of slaughter," says Mr. Veblen, being the expression of the slayer's transcendent might, "casts a glamour of worth over every act of slaughter and over all the tools and accessories of the act." The handling of arms is the "honorific" employment *par excellence*. The handling of the tools and implements of industry is beneath the dignity of able-bodied men.

From this basis Mr. Veblen pursues the main economic aspects of the history of the leisure class from the days of barbarism to the present time. The introduction of ownership into society brings with it another form of strife, viz., pecuniary emulation, and the resultant struggle for still higher "conspicuous leisure" with its attendant "conspicuous consumption." The forms which conspicuous leisure and conspicuous consumption take are illustrated by arguments drawn from every-day life, and are analysed with a clearness which does much toward enforcing Mr. Veblen's views. The pecuniary standard of living in modern society and the pecuniary canons of taste in modern society, dress as an expression of pecuniary culture, industrial exemption and conservatism as a distinguishing mark of leisure, are then interestingly discussed.

The most attractive chapters of the book are those on the conservation of archaic traits, on modern survivals of prowess, the belief in luck, and devout observances, all of which are shown to be survivals, in their most exquisite form, from the barbaric periods in which the leisure castes were instituted. For example, under the heading of "Survivals of Prowess" are mentioned the duel, boys' military organisations, hunting, and certain forms of athletic sports. The chapter on

"Devout Observances" is coldly analytic. Devout habits are regarded as the survivals of an archaic scheme of life which has outlived much of its usefulness for the economic conditions of to-day, and are held to involve the same philosophy of life as the sporting, gambling, or athletic habit. The final chapter on "The Higher Learning as an Expression of the Pecuniary Culture" involves many points of view which should receive consideration. The universities are shown to be largely institutions which support the leisure-class scheme of life, for they involve a notable element of conspicuous waste of time and substance; and their archaic propensities for spectacular effect, their championism of the studies which involve high consumption and low industrial efficiency, their hankering after antique symbols as shown in the recent adoption of cap and gown as learned insignia, their trivialities in points of form and ritual, their excessive encouragement of athletic sports, are all emphasised as social reversions to the barbarian stage.

It is to be remembered, however, that the criticism of existing constitutions advanced in Mr. Veblen's work is exclusively the expression of the economic point of view, and that a multitude of considerations may be advanced for the refutation of certain of his main tenets. Society is not exclusively an economic machine for the production of just that quantity of fodder which is necessary to sustain animal existence, and to ensure the perpetuation of the species; if it were, the lowest forms of life would have to be considered the most successful, and the farthest advanced evolutionally. Society is also an engine for life, and it may legitimately subserve the higher aims and ideals of life, which alone make existence tolerable, even when it appears disjointed economically. Yet Mr. Veblen has written a very interesting work and one which will hold the attention of its readers. T. J. McC.

SOLOMON AND SOLOMONIC LITERATURE. By *Moncure Daniel Conway*. Chicago: The Open Court Publishing Co.; London: Kegan Paul, Trench, Trübner, & Co. Pp., 248. Price, $1.50 (6s.).

This latest production of Mr. Conway's pen may be regarded from both a literary and a scientific point of view as the ripest fruit of his long-continued activity in the realm of comparative mythology; and its reading will be invested for every one with an unfailing and uninterrupted charm, no matter what ground of difference one may have with the peculiar tenets, or with the intellectual and emotional prepossessions, of the author.

"There is a vast Solomon mythology," says Mr. Conway, "in Palestine, Abyssinia, Arabia, Persia, India, and Europe; the myths and legends concerning the traditional Wisest Man are various, and merit a comparative study they have not received." Taking this mythology as his text, he proposes "to study the evolution of the human heart and mind under influences of which a peculiar series is historically associated with Solomon's name." He finds running throughout the whole a bifold evolution. He says:

"While in various parts of Europe 'Solomon's Seal,' survival from his magic

ring, is the token of conjuring and fortune-telling imposters, the knightly Order of Solomon's Seal in Abyssinia has been raised to moral dignity by an emperor (Menelik) who has given European monarchs a lesson in magnanimity and gallantry by presenting to a 'Queen of the South' (Margharita), on her birthday, release of the captives who had invaded his country. While this is the tradition of nobility which has accompanied that of lineal descent from the Wise Man, his name lingers in the rest of Christianity in proverbial connexion with any kind of sagacity, while as a Biblical personality he is virtually suppressed.

"In one line of evolution—whose historic factors have been Jahvism, Pharisaism and Puritanism—Solomon has been made the Adam of a second fall. His Eves gave him the fruit that was pleasant and desirable to make one wise, and he did eat. Jahveh retracts his compliments to Solomon, and makes the naïve admission that the deity itself cannot endow a man with the wisdom that can ensure orthodoxy, or with knowledge impregnable by feminine charms (Nehemiah xiii.); and from that time Solomon disappears from canonical Hebrew books except those ascribed to his own authorship.

"That some writings attributed to Solomon—especially the 'Song of Songs' and 'Koheleth' (Ecclesiastes)—were included in the canon, may be ascribed to a superstitious fear of suppressing utterances of a supernatural wisdom, set as an oracle in the king and never revoked. This view is confirmed and illustrated in several further pages, but it may be added here that the very idolatries and alleged sins of Solomon led to the detachment from his personal self of his divinely-conferred Wisdom, and her personification as something apart from him in various avatars (preserving his glory while disguising his name), an evolution culminating in ideals and creeds that have largely moulded Christendom.

"The two streams of evolution here suggested, one issuing from the wisdom books, the other from the law books, are traceable in their collisions, their periods of parallelism, and their convergence,—where, however, their respective inspirations continue distinguishable, like the waters of the Missouri and the Mississippi after they flow between the same banks."

These two streams of evolution Mr. Conway then proceeds to trace in all their various ramifications in the folk-lore of Ancient and Modern Judaism, Buddhism, and Early and Modern Christianity. It is a fascinating picture that he has unrolled, and one that he has adorned with all his customary literary art,—for more than "a literary critique" his book does not pretend to be. He says: "The studies and experiences of many years have left me without any bias concerning the contents of the Bible, or any belief, ethical or religious, that can be affected by the fate of any scripture under the higher or other criticism. But my interest in Biblical literature has increased with the perception of its composite character ethnically. I believe that I have made a few discoveries in it; and a volume adopted as an educational text-book requires every ray of light which any man feels able to contribute to its interpretation."

The titles of his chapters are as follows: (1) Solomon; (2) The Judgment of Solomon; (3) The Wives of Solomon; (4) Solomon's Idolatry; (5) Solomon and the Satans; (6) Solomon in the Hexateuch; (7) Solomonic Antijahvism; (8) The Book of Proverbs and the Avesta; (9) The Song of Songs; (10) Koheleth (Ecclesiastes); (11) Wisdom (Ecclesiasticus); (12) The Wisdom of Solomon; (13) Epistle to the Hebrews (A Sequel to Sophia Solomontos); (14) Solomon Melchizedek; (15) The Pauline Dehumanisation of Jesus; (16) The Mythological Mantle of Solomon Fallen on Jesus; (17) The Heir of Solomon's Godhead; (18) The Last Solomon.

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ELEMENTARE ARITHMETIK UND ALGEBRA. Von *Dr. Hermann Schubert*. Leipsic: G. J. Göschen. 1899, Pp. 230. M. 2 80.

ALGEBRA. Mit Einschluss der elementaren Zahlentheorie. Von *Dr. Otto Pund*. Leipsic: G. J. Göschen. 1899. Pp. 345. Price, M. 4.40.

ELEMENTE DER STEREOMETRIE. Erster Theil: Die Lehrsätze und Konstruktionen. Von *Prof. Dr. Gustav Holzmüller*. Leipsic: G. J. Göschen. 1899. Pp. 383. Cuts, 282. Price, M. 5.40.

In comprehensiveness, rigor, and practical adaptability to scientific needs, the "Schubert Mathematical Series," issued by the enterprising house of Göschen, of Leipsic, bids fair, from its prospectus, to rival any existing series of text-books. The "Sammlung Schubert" is designed to embrace in a perfectly systematic and unitary fashion the entire province of practical and theoretical mathematical exposition. Some twenty odd volumes have already been announced in all the branches of geometry and analysis, including a history of mathematics by Dr. Robert Haussner, and not omitting treatises on such subjects as Insurance, Probabilities, Theoretical and Applied Mechanics, etc. The presentations are all to be the work of competent authors, and the promise is made that they will in every respect meet the present-day requirements of mathematical research,—a promise which the three volumes listed at the head of this notice have fulfilled.

Dr. Schubert's presentation includes all of elementary arithmetic and algebra, except geometric series, the theory of compound interest, higher arithmetic series, combinations, the binomial theorem, probabilities, continued fractions, indeterminate equations, binomial and cubic equations,—subjects which he has reserved for a forthcoming volume devoted to *Niedere Analysis* or to what we might term Collegiate Algebra, being the analysis strictly necessary for taking up the calculus, Dr. Schubert has performed his task skilfully. It is done in the manner which is well known to those familiar with his other text-books. The exposition is much condensed and restricted entirely to mattters involving questions of principle. The chief stress is laid upon operational symbols and laws, and upon the logical and systematic development of the entire system of arithmetic from a few fundamental ideas (association, distribution, etc.). The book is not overloaded with examples, but contains just the adequate number. Historical remarks have been appended.

Dr. Pund's *Algebra* deviates widely from the type of the ordinary algebraic manual. It is designed to occupy an intermediary position between this type and such works on advanced modern algebra as the large text-books of Weber, Netto, and Serret. Its points of view are those of relatively recent abstract research, and it leans with predilection to the purely formal and non-visualisable propositions of the theory of numbers. The doctrine of "groups," which is now ubiquitous in mathematics, receives special consideration, as does that of "systems of moduli," as developed by Dedekind and Kronecker. The theory of "linear congruences" is treated, and its superiority as a method of resolution over the old procedures exhibited. Determinants are expounded upon the analytic basis furnished by Kronecker, and discussed in connexion with systems of linear equations. Finally, the science of algebraic forms and functions, as thus developed, is applied to the theory of equations. The remaining subjects considered are the "Divisibility of Integral Numbers," "Permutations," "Divisibility of Integral Functions," "Quadratic Residues," "Resultants, Discriminants, and Elimination." It will be seen from this *résumé* that Dr. Pund's book will fill what to many has been a real gap in text-book literature.

Even more may be said of the splendid and complete work on the *Elements of Solid Geometry* which has been given us by Dr. Holzmüller, director of the Technological School at Hagen, and author of a mathematical series accredited and used in the schools of Prussia. This work of which the first volume has appeared, will treat elementary geometry of three dimensions from the point of view of modern research entirely, and will supply the chief deficiencies in material of such standard and excellent works as Baltzer, Schlömilch, Geiser, Reye, Heinze-Lucke, and others. Some of the subjects thus treated and omitted in some one or in all of the afore-mentioned works are, for example, the conic sections and the conical surfaces in projective geometry, Dupin's cyclides, the curvature of surfaces, poles and polars, duality, inversion, stereographic projection, affinity, collineation, chartographic representation, etc., etc. One special feature is the chapter devoted to *stereometric drawing*, where even Kepler's and Poinsot's solids are dealt with, and stereoscopic representations given of the dodecahedron and icosahedron. Correct drawing, indeed, is insisted upon as an indispensable pre-requisite for constructive exposition, and the 282 figures of the book are themselves exemplars in this regard. Not the most unimportant parts of the book are the brief but interesting historical and bibliographical notes. The typography, like that of the other two books, is especially clear and satisfactory, and will go a great way toward recommending the series. μκρκ.

DISCOURSE ON METHOD. By *René Descartes*. Chicago: The Open Court Publishing Co. Pp. 87. Price, paper, 25c.

The present little volume constitutes number 38 of the Religion of Science Library and is an authorised reprint of Dr. Veitch's well-known translation. Des-

cartes' *Method* is one of the classics of the history of philosophy, and is, both by its brevity and spirit, preëminently adapted to serve as an introduction to the study of modern thought. With Hume's *Essay*, and Kant's *Prolegomena* it contains more food for genuine creative reflexion than can be gained from the tomes of epigonic technical philosophers of twenty times its size. It is republished in this cheap form to make it accessible to every reader. The publishers have added a brief biographical appreciation of Descartes, and a working bibliography of Descartes-literature. A handsome half-tone reproduction of Franz Hals's portrait of the great philosopher adorns the little volume as frontispiece. *μ.*

NEW PLANE AND SOLID GEOMETRY. By *Wooster Woodruff Beman*, Professor of Mathematics in the University of Michigan, and *David Eugene Smith*, Principal of the State Normal School at Brockport, New York. Second revised edition. Boston: Ginn and Co. 1899. Pp., 382.

We are pleased to see this second, revised edition of Beman & Smith's Geometry. It is an evidence that the efforts of our most advanced and enlightened educators are receiving their adequate appreciation at the hands of the pedagogic public. The best theoretical endeavors of Germany, France, England, and Italy are here combined with characteristically practical American points of view which lead us to believe that in matters of education we have in the last decade or two been doing work which in the end shall leave us in actual cultural results behind no other nation. We can point, both in this and in other domains, to recent American text-books that, despite our ancient and proverbial shortcomings, still show that the talents entrusted to us have not been given in vain. It is more than a shrewd eclecticism, profiting by the accumulated treasures of European thought, that has inspired that genuine *Aufschwung* of educational effort in modern America which has become so signal a feature of our present life; and we shall not be surprised if the fruits of it react with interest upon the sources whence it has been derived.

The present work is a compromise between the traditional treatment of Euclid and Legendre, and the more natural and heuristic methods of the modern geometers. In the text, the authors have adhered to the ancient, the formal, and the logical method of exposition; in the definitions and the discussions they have made use of the more appropriate and the more realistic machinery of modern research; while in the exercises and examples they have supplemented in so practical a manner the matter of their text as to leave little to be desired from the point of view of a sound evolutionary instruction.

On the appearance of the first edition of this book, we were, we must confess, sceptical as to the pedagogic value of many of its innovations,—especially with regard to certain features of its notation and symbolism,—but since then our doubts have been dispelled by actual experience; and we are of the opinion that supplemented by the tact of a competent and adaptive teacher (and here lies the rub in elementary instruction) this type of text-book will be found to meet the really neces-

sary requirements. Personally, we believe in a *genetic* geometry, developed from the individual (infantile and mature) formal experience of every person, agreeing with the racial and cosmic experience, forming a part of one's total mental life, and not constituting a forced, transitory, and factitious episode of a High-School sojourn, from which nothing remains but the mazy congruence of a couple of stale, flat, and unprofitable triangles, a Pythagorean proposition, and the memory of a grand intellectual opportunity that has been lost. We may leave to the minds of maturity, the magnificent formalism and logic of Euclid, worthy scion of Plato and Aristotle, whose gods even "arithmetised"; but let us give to our children a live acquaintance with that real world of forms which is open to us all in our every-day life and from which the great predecessors of Euclid too drew; and the catalogue of the Archimedes, the Monges, and the Jacob Steiners, shall be swelled beyond credibility.

For details we must refer to the work itself. The second edition is formally and typographically a vast improvement on the first. T. J. McC.

THE EVOLUTION OF GENERAL IDEAS. By *Th. Ribot*, Professor in the Collège de France. Authorised translation from the French by *Frances A. Welby*. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co. 1899. Pp. 231. Price, $1.25 (6s. 6d.).

This is a characteristic production of M. Ribot,—a study of pure psychology, of the genesis and embryogeny of general ideas, rigorously excluding all that relates to logic, the theory of knowledge, and metaphysics. We are thrown, here, he says, "upon observation, upon the facts wherein mental processes are enunciated, and discovered. Our material, and principal sources of information, lie therefore: (1) for inferior abstracts, in the acts of animals, of children, of uneducated deaf-mutes; (2) for intermediate abstracts, in the development of languages, and the ethnographical documents of primitive or half-civilised peoples; (3) for superior abstracts, in the progressive constitution of scientific ideas and theories, and of classifications."

"We shall endeavor," further, "to show how the faculty of abstracting and of generalising has been developed empirically, and to follow it in its spontaneous and natural evolution as shown in history,—not in the philosophical speculations which are only its efflorescence, and which, for the most part, ignore or despise its origins."

In the progressive development of the operations of abstraction and generalisation, he finds three main periods: "(1) inferior abstraction, prior to the appearance of speech, independent of words (though not of all signs); (2) intermediate abstraction, accompanied by words, which though at first accessory, increase in importance little by little; (3) superior abstraction, where words alone exist in consciousness, and correspond to a complete substitution."

We have then passed in rapid and brilliant review the main facts of animal,

child, ethnic, and linguistic psychology, as well as the main outlines of the history of science. The chief interest for philosophical readers will lie in M. Ribot's examination of scientific ideas (the concepts of number, space, time, cause, law, and species), in which will be found a fine critical summary of the best recent speculation on these topics (and the same may be said of the chapters on the lower forms of abstraction and on language). The volume possesses thus, in addition to its incisive and apt scientific criticisms, its lucidity and economy of exposition, a decided value as an epitome of research. It will accordingly rank with M. Ribot's other works in popularity and in the success with which it is destined to disseminate among the public at large, sound and practical psychological ideas. The translation has been excellently done. *μ.*

A First Book in Organic Evolution. By *D. Kerfoot Shute, A. B., M. D.* Ophthalmic Surgeon to the University Hospital (Columbian), Professor of Anatomy in the Columbian University. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co. 1899. Pp. 285. Illustrations 30. Colored plates, 9. Price, $2.00 (7s. 6d.).

Dr. Shute has proposed in this work to write an *introduction* to the Development Theory, only; and the book is designed especially for prospective medical students, and for high schools, academies, and colleges. The style is easy and simple, and great pains have been taken, by means of a very full etymological glossary, to make every technical term clear. The introductory studies on classifications, cellular physiology, heredity, ordinary zoölogy and botany, have been prepared purposely for the needs of the beginner, and nothing technical beyond what is contained in the book is requisite to its comprehension. While the author makes no claim to originality, save in the matter of presentation, commendatory words may still be said as to his method of arranging his material and particularly as to the illustrations and diagrams several of which are new. The colored plates, nine in number, are splendid specimens of the printer's art, and contain in themselves more instruction as to the rôle coloration plays in natural selection than triple the number of pages in print could convey. Having Dr. Shute's book, no one, however slight his knowledge of biology, can now have the remotest pretext for not acquainting himself with the main features of the theory of evolution. *μ.*

L'Année Biologique. Comptes rendus annuels des Travaux de Biologie Générale. Publiés sous la Direction de *Yves Delage* Professeur à la Sorbonne, avec la collaboration d'un Comité de Rédacteurs. Secrétaire de la Rédaction *Georges Poirault*, Directeur du Laboratoire d'enseignement supérieur de la villa Thuret, à Antibes. Troisième Année, 1897. Paris: Schleicher Frères. 1899. Pp. 843.

The *Année biologique* keeps on increasing in size; the report upon the vast and swelling bulk of biological inquiry seems to have no end; and it is precisely in

this circumstance that the great value of the *Année* lies. The science of biology in all its extent for the year 1897 is here epitomised and one need have this volume only, to be assured that nothing of importance has escaped one's notice. Too much praise, therefore, cannot be bestowed upon the editors and their collaborators for the performance of their wearisome task; and it is to be hoped that the work will find its way into all working libraries.

The principal modification of the contents for 1897 is the introduction of a new heading "Polymorphism," which is a name for such phenomena as the existence of workers, drones, and queens in colonies of bees. The general captions are: "The Cell," "The Sexual Products and Fecundation," "Parthenogenesis," "Asexual Reproduction," "Ontogenesis," "Teratogenesis," "Correlation," "Death, Immortality," "Morphology," "Heredity," "Variation," "Origin of Species," "Nervous Systems and Mental Functions." μ.

NATURALISM AND AGNOSTICISM. The Gifford Lectures Delivered Before the University of Aberdeen in the Years 1896–1898. By *James Ward*, Sc. D., Hon. LL.D. Edinburgh, Professor of mental Philosophy and Logic in the University of Cambridge. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1899. 2 vols. Pp. 302, 294.

These lectures will be profitable reading to many students of the philosophy of science, for they come from a psychological writer of distinction, and both afford a tolerable retrospect of scientific history and cast a cheerful horoscope of the future. Mr. Ward seeks to overthrow the purely mechanical conception of the universe, and believes that "an examination of the 'real principles' of Naturalism secures us a specially advantageous position for discussing the epistemological questions on which the justification of idealism depends." As to agnosticism, he remarks: "The unity of experience cannot be replaced by an unknowable that is no better than a gulf between two disparate series of phenomena and epi-phenomena. Once materialism is abandoned and dualism found untenable, a spiritualistic monism remains the one stable position. It is only in terms of mind that we can understand the unity, activity, and regularity that nature presents. In so understanding we see that Nature is Spirit." Further, since naturalism and agnosticism "eventually lead us to spiritualistic monism in spite of themselves, their demurrer to theistic inquiries is not sustained." On the ground that necessary truths are "truths of reason," they are held to originate in the *subject* of experience and not in the object; hence the justification of Mr. Ward's doctrine. But it does not follow that because they originate in the subject, they are not objective in character and validity, nor even non-experiential in origin. This is always the error of the spiritualists, (who, while professing monism, are dualists without knowing it), that they still regard the subjective and the objective as belonging to disparate realms, the one as real the other as unreal, and their modes of operation as essentially distinct. The strictly "scientific," i. e., the mathematico-mechanical, view of the universe

Mr. Ward says can never give us "rational insight, spiritual light, understanding." We do not see why. If Mr. Ward cannot put reason and poetry into it, perhaps others can; much depends upon ourselves and on the *character* of our conviction, in this regard; to us, "the thoughts that often lie too deep for tears" may be conceived to spring far more naturally and spontaneously from nature considered as a law-determined cosmos than from nature conceived as an elusive, obscure, and impenetrable source of sentimentalities. We are in accord with many of the trenchant criticisms that Mr. Ward has made, but we cannot agree with his view of the limitations of scientific research. It would seem that in most instances, he is overthrowing Mr. Spencer's philosophy of science (which forms his main object of attack), not the philosophy of science itself, which is quite a different thing. *μκρκ.*

THE LOGICAL BASES OF EDUCATION. By *J. Welton, M.A.*, Professor of Education in the Yorkshire College, Victoria University. London: Macmillan and Co., Limited. New York: The Macmillan Company. 1899. Pp. 288. Price, $1.00.

Mr. Welton is one of those who believe that the solution of all the questions relative to education will be found in the study of modern logic; for logic analyses the processes by which knowledge is reached, and education is the inculcation of knowledge. In like manner, it has been contended that, since man is an animal, all philosophy is merely a branch of biology, as in a farther view it might be of astronomy. The connexion is evident and will not be disputed. But the present book is nevertheless a treatise on elementary logic and not a treatise on education. In the former respect it is good, and will, because of its desire to influence the theory of education, perhaps be better suited to teachers than many another text-book of logic. It has appeared in Macmillan's *Manuals for Teachers* series, and is excellently got up. *μ.*

AN ETHICAL SUNDAY SCHOOL. A Scheme for the Moral Instruction of the Young. By *Walter L. Sheldon*, Lecturer of the Ethical Society of St. Louis; Author of "An Ethical Movement." London: Swan Sonnenschein and Co., Ltd. New York: The Macmillan Co. 1900. Pp. 206. Price, 3s.

Parents and educators desirous of substituting some more rational and systematic method of religious instruction for the conventional Sunday-school may find a basis for their work in this volume. Mr. Sheldon claims for it the value of *sketch*, and nothing more. It has cost much hard practical work to produce it, and it is the outcome of many disheartening failures. Here are some of its ideas: "It was our intention to reverse the process customary in the average Sunday school, letting the teaching concerning what is commonly known as 'religious conceptions' come in at the end of the course, *beginning* the course of instruction with the elements of morality. It has not been our purpose in any way definitely to antagonise religious beliefs. But instead of beginning our teaching with talks about 'God,'

this latter feature comes in as the last step, with which we close our course of instruction for the young, just before they leave our charge to enter the larger School of Life."

The services are quite varied with more of a leaning to business than in the ordinary school. There are "responsive exercises," musical exercises, recitations, art-studies, picture-talks, æsthetic exercises, story-telling from the Bible, "beautiful thought" studies from the ethical and religious world-literature, etc., etc. In so new and unique an attempt as this, one must naturally refrain from criticism; it is an honest effort in a field where too little work is done to be scoffed at, and if to many, the substitutes for the old forms seem hollow, poor, and fantastical, let them send Mr. Sheldon their own suggestions, which he says will be welcome. *μ.*

KANT AND SPENCER. A Study of the Fallacies of Agnosticism. By *Dr. Paul Carus*. Chicago: The Open Court Publishing Co.; London: Kegan Paul, Trench, Trübner & Co. 1900. Pp., 105. Price, 20 cents.

The papers constituting this volume, which forms No. 40 of the Religion of Science Library, are: (1) The Ethics of Kant, (2) Kant on Evolution, (3) Mr. Spencer's Agnosticism, and (4) Mr. Spencer's Comment, with the Author's Reply. In the first two Dr. Carus endeavors to show the baselessness of Mr. Spencer's contention that Kant's ethics is a system of supernatural mysticism, and to do this he makes numerous quotations from Kant's scientific writings which fully establish Kant's claim to be a precursor of Lamarck, Von Baer, and Darwin as an evolutionist. In the last two essays he attacks Mr. Spencer's agnosticism and philosophy generally, taking advantage of the historical and critical questions involved to elucidate certain basic problems of philosophy. The upshot of his position is summarised in the following words:

"I do not say that it is necessary to be a Kantist in any sense; but to be a leader of thought, a leader that leads onward and forward, it is indispensable to understand Kant. Mr. Spencer's attitude toward Kant has remained disdainful and even hostile. This is the more to be regretted as Mr. Spencer possesses many rare accomplishments that would naturally have fitted him to become an apostle of progress. He is regarded so by many of his adherents and enemies, but only by those who are superficially acquainted with philosophical problems. I do not hesitate to say that Mr. Spencer is a reactionary spirit. He seems progressive because he objects to the religious dogmas that have been established by tradition, but he is reactionary because he boldly sets up nescience as a philosophical principle, and the time is near at hand when his very enemies will take refuge in his doctrines.

BIOLOGICAL LECTURES FROM THE MARINE BIOLOGICAL LABORATORY, Wood's Holl, Mass. Boston: Ginn & Co. 1899. Pages, 343. Price, $2.90.

The lectures of the Wood's Holl Marine Biological Laboratory for 1898 are of more than usual interest, and will go a great way toward the elucidation of some

of the moot problems of biology. The titles and authors of the lectures are as follows: (1) The Structure of Protoplasm, by E. B. Wilson; (2) Cell-Lineage and Ancestral Reminiscence, by E. B. Wilson; (3) Adaptation in Cleavage, by F. R. Lillie; (4) Protoplasmic Movement as a Factor of Differentiation, by E. G. Conklin; (5) Equal and Unequal Cleavage in Annelids, by A. L. Treadwell; (6) The Cell Origin of the Prototoch, by A. D. Mead; (7) Relation of the Axis of the Embryo to the First Cleavage Plane, by C. M. Clapp; (8) Observations on Various Nucleolar Structures of the Cell, by T. H. Montgomery, Jr.; (9) Protoplasmic Contractility and Phosphorescence, by S. Watasé; (10) Some Problems of Regeneration, by T. H. Morgan; (11) The Elimination of the Unfit as Illustrated by the Introduced Sparrow, Passer Domesticus, by H. C. Bumpus; (12) On the Heredity of the Marking in Fish Embryos, by Jacques Loeb; (13) Do the Reactions of Lower Animals Due to Injury Indicate Pain-Sensations? by W. W. Norman; (14) North American Ruminant-Like Mammals, by W. B. Scott; (15) Caspar Friedrich Wolff and the Theoria Generationis, by W M. Wheeler; (16) Animal Behavior, by C. O. Whitman.

Professor Loeb's article shows how the *analytic* study of heredity has taken the place of such attempts as Weismann's and Jaeger's to explain it by means of a single theory. He says: "The change in our attitude toward this problem is similar to that which has taken place in psychology. Psychologists no longer try to give a theory of the soul or of consciousness, but try to analyse the various groups of psychical phenomena more or less independently of each other."

His own researches are contradictory especially of the conclusions of Eimer. He remarks: "I am no believer in Weismann's theories of heredity, but it seems to me that the so-called theories of Eimer on the origin of the longitudinal striation in animals are nothing but a play on words. One of his 'general laws' maintains that every marking is at first longitudinal. The truth of the matter is that most animals are not spherical, and that most organs, especially in segmented animals, run in a longitudinal direction through the animal; for instance the spinal cord, vertebral column, blood vessels, intestine, etc."

ON SPINOZISTIC IMMORTALITY. By *George Stuart Fullerton*, Professor of Intellectual and Moral Philosophy in the University of Pennsylvania. Publications of the University of Pennsylvania Series in Philosophy. No. 3. Boston: Ginn & Co. 1899. Pages, 154.

This monograph will be useful to the student of Spinoza. "Spinoza," says Professor Fullerton, "represents a certain way of thinking which properly belongs, I believe, to the past, but of which there are to-day, particularly in England and America numerous survivals. Spinozism has an historical justification; it is an articulated system resting upon a basis which might well have seemed in the seventeenth century, sound and satisfactory. Its very errors are deserving of a certain respect. But conceptions which do not appear out of place upon a back-

ground of seventeenth century thought, are a discordant element in the thought of the nineteenth. They have not the excuse for existence which they once had, and they hold their own, I believe, simply because they are not analysed with sufficient care. If my criticisms will contribute even a little toward turning upon such conceptions a more searching light, I shall be abundantly satisfied."

All of Professor Fullerton's readers will not share his fear of Spinozism, but they will certainly be glad for his analysis of one of the purest and clearest thinkers of history.

EDUCATIONAL LEGISLATION AND ADMINISTRATION OF THE COLONIAL GOVERNMENTS. By *Elsie W. Clews, Ph. D.* Columbia University Contributions to Philosophy, Psychology, and Education. Vol. 6. Nos. 1–4. New York: The Macmillan Co. 1899. Pp., 524. Price, $2.00.

"In spite of the emphasis that in recent years has fallen upon the significance of educational history," says Mr. Clews, "the history of American education is as yet unwritten." Hence the justification for the compiling of this bulky book. "In a country of representative government," continues the author, "one of the most fruitful and available means of historical study for the sociologist lies in the tracing out of the development of important social principles through a continuous process of legislation. Single acts of legislation indicate little; but the history of successful and unsuccessful legislation on any given subject cannot fail to point out the course of a society's thought and activity in relation to such subject. In this view I have endeavored, in the present account of the educational legislation of the central governments of the American colonies, to put into available shape the records of that legislative interest in education which was at times the formulation of, and at times the stimulus to, the colonists' educational efforts."

PAGES CHOISIES DES GRANDES ÉCRIVAINS. Lectures Litteraires: (1) Diderot. (2) Guyau. (3) J. J. Rousseau. (4) Cicero. (5) Victor Cousin. Paris: Armand Colin & Cie. Price, 4 francs, bound.

We desire to call attention to this series, from the fact that several of its numbers contain selections from philosophical writers. In the main, the series is literary, and is made up of extracts from such modern authors as Balzac, Chateaubriand, Dumas, Gautier, Lesage, and George Sand, and from several ancients, as Homer and Virgil. But it is to be hoped that in the long run still more of classical, scientific, and philosophical literature will be included, as the plan is excellent in every regard. Each volume is prefaced by a critical and biographical notice from the hands of a competent editor and in some cases by a list of the author's works. The series has more than a merely linguistic and belletristic value, and the selections of the volumes have been well made. μ.

VOL. X. JULY, 1900. No. 4.

THE MONIST

ON THE VOLUNTARY TRANCE OF INDIAN FAKIRS.[1]

IN the spring of 1896 the newspapers told of two Indian fakirs at the Millennial Exposition in Budapest, who took turns at putting each other into hypnotic sleep from which they awoke at the expiration of from eight to fourteen days. The one who was in the hypnotic state was exposed to public view in a glass coffin. The two Indians were observed by Professor Aurel von Török, the anthropologist of Pest, and by the Viennese neuro-pathologist, Professor Benedict. A report of the weights and the measurements of temperature, pulse, and respiration of the two fakirs made by Professor Török in May 1896, is to be found in the *Correspondens-Blatt der deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, for 1896, pp. 49, 50. In this essay Török makes the cautious remark with reference to the observations reported, that a strictly scientific and responsible inspection was out of the question in the matter, since a public exposition was neither the proper place nor the proper time for a strictly scientific investigation. The justification for this qualification came to light soon after this publication in the fact that the two fakirs were exposed as swindlers,—or, more correctly, the one of them who was at the moment sleep-

[1] Translated from the author's manuscript by W. H. Carruth, of the University of Kansas.

ing in the glass coffin. Some gentlemen to whom the whole performance seemed incredible concealed themselves one evening in the apartment in which the glass coffin stood, and saw some hours later in the night, the lid of the coffin rise and the alleged hypnotised fakir come forth and partake of a cake and a bottle of milk. They sprang out instantly and seized the fakir, and this was the end of the rôle of the two Indians in Budapest. In all probability the fakir thus exposed had regularly taken nourishment in the night; yet we must assume that he was accustomed then by autohypnosis to throw himself into the hypnotic state for nearly twenty-four hours; for the physicians of Budapest who investigated left no doubt that the one of the two Indians whose turn it was, lay by day in a really rigid state in the coffin. Nevertheless, the two fellows, who claimed to produce a hypnotic sleep of seven or fourteen days, instead of merely one of a day's length, had perpetrated such an evident fraud that it is no wonder if straightway the conviction gained ground in wide circles that the much-discussed ability of the Indian fakirs to lie one or even several weeks in a cataleptic condition was altogether a swindle. But this suspicion is by no means warranted, inasmuch as we have positive testimony to the contrary.

The ability of certain fakirs to suspend their vital activities for a considerable length of time, and even to be buried for a while in this condition, without thereby seriously harming life or health, is confirmed by performances of which perfectly reliable, high English civil and military officials were witnesses. No one who can properly estimate the value of historical documents can conserve any doubts in the case. Although the testimony in the case was compiled after careful investigation and published by no less a man than James Braid, the European discoverer of hypnotism, in his treatise, *Observations on Trance or Human Hibernation* (London and Edinburgh, 1850), and although his treatise was made conveniently accessible to the German public by W. Preyer in his German edition of Braid's selected works (Berlin, Gebrüder Packl) under the title *Der Hypnotismus*, yet the remarkable facts have become known to a strangely slight extent; indeed, I have been sur-

prised to learn of even distinguished medical men who have not the slightest knowledge of them. Accordingly it seems to me proper to discuss the subject somewhat in detail in this journal and to explain the significance of these observations for the history of civilisation. The fanciful expositions which have been devoted in our day by mystics and other uncritical people to the demonstration of trance by the fakirs as being a supernatural phenomenon beyond the means of science to explain, I of course ignore; but I shall use with gratitude the excellent contribution on this subject kindly sent me by Prof. Ernst Kuhn, of Munich, for my description of the Yoga system in the *Grundriss der indo-arischen Philologie und Alterthumskunde* (Vol. III., No. 4, pp. 47, 48).

To begin with, I must remark that the Indians whom we are discussing should not be called fakirs. The word "fakir" is Arabic, and has come into the modern Indian languages through the Persian; it really means "poor," and is applied to Mohammedan ascetics. But in the case which interests us here we have to deal, not with Mohammedans, but exclusively with Hindus; and the ascetics among the Hindus are called "Yogin" (nominative, Yogî). The word is derived from "Yoga." Yoga in its broadest sense is the name of an old, pre-Buddhistic philosophical system to which I cannot here devote more attention, save to say for its characterisation that it teaches the absolute distinction of matter and spirit. In the accurate recognition of this distinction the system sees the means of salvation, i. e., of salvation in the Indian sense: release from the necessity of passing through ever new earthly existences after death, in a word, the attainment of eternal repose. In the course of time there has been substituted for this negative aim that of union with God. In the narrower sense Yoga designates the physical and spiritual discipline by which man succeeds in diverting his mind from all other things and concentrating his thought fixedly and steadfastly upon one certain point, i. e., either upon his own inner self, or in later times, upon the divinity, or even upon other things. The Yoga procedure is minutely described in the system, and consists in a series of stages which are to be passed through. In this all sorts of corporeal attitudes play

a part, also the counting of the inspirations and expirations, and especially the suppression of the breath, the fixing of the gaze upon a definite point, as the tip of the nose, the navel, and so on. The final result of this Yoga procedure is the falling into unconsciousness, the so-called Yoga-sleep, which is regarded as an introductory step to salvation, especially in case life actually goes out while the subject is in the Yoga-sleep. Now I scarcely need to insist that this Yoga-sleep, which is, of course, regarded by the Indians as a very wonderful phenomenon, is nothing else than the hypnotic sleep. In fact a whole series of hypnotic methods are described in the Yoga texts, such as have always proven effective. Under the name of "trâṭaka" later Yoga texts, which rest however upon accient traditions, recommend the steadfast gazing at some small object until the eyes begin to water; and as the result of this practice it is said that the body will become as rigid as a piece of wood, i. e., cataleptic. A method which seems to be of especial importance in the artificial trance of the Yogins is the so-called "khecarî" (pronounce kācharē). It consists in putting the tip of the artificially lengthened tongue back into the throat while at the same time keeping the eyes fixed upon the spot between the eyebrows. Among us too, in recent times, it has been observed that the steady elevation of the eyes in an oblique direction induced hypnotic sleep.

In the execution of the Yoga procedure before complete unconsciousness ensues the Yogin is said to hear within his body (in the heart, the throat, between the eyebrows and in other places) various tones, to wit, consecutively the roar of the sea, of the thunder, of a drum, of a shell, of a bell, of a pipe, of a lute, and of a bee. There is no doubt that such sounds were heard as a result of auto-suggestion; and just as confidently we may assume that a skilful hypnotist to-day could produce by suggestion in a responsive subject the same tone-sensations in exactly the same order as the Yoga text reports.[1]

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[1] Cp. Hermann Walter, translation of the *Haṭhayogapradîpikâ* (Munich 1893), pp. xxviii, xxix.

The correct and persistently practised Yoga procedure has according to Indian opinion therapeutic as well as various other effects; but according to general belief it especially secures to man the magic powers so often mentioned in Indian literature. When the authors of the Yoga texts promise these supernatural powers, we must not forget that these were men who were very serious about their task of advancing the attainment of the highest goal; deliberate fraud is certainly not to be ascribed to them. They are simply expressing the convictions of the Yogins, who by suggestion in the hypnotic state really believed themselves to be possessed of such powers. These alleged wonderful powers are in part the same which our somnambulists think they possess. I will name merely a few of the frequently enumerated powers: the ability to make oneself infinitely small or invisible; to increase one's size immensely and to reach the most remote objects, as, to touch the moon with one's finger-tips; to transport oneself anywhere at will. There is mentioned also an increase in the acuteness of the senses such that the most remote objects could be perceived even through intervening walls and the like, and also the processes in the inside of other persons (mind-reading); knowledge of past and future, especially of one's own death hour; the ability to cause the dead to appear and to communicate with them, and still other similar things. Even the most enlightened Brahmans are to this day firmly convinced of the possibility of obtaining these marvellous powers by means of the Yoga procedure. The fact that such powers are not publicly manifested by the Yogins is explained by the condition precedent to the attainment of them, to wit the absolute indifference of the Yogins to the things of this world. One of my instructors, the Brahman Mohanlâl, one of the best and most intelligent Indians I have known, informed me at the beginning of the year 1887 that he proposed, after completing his engagement with me, to devote himself with all zeal to the Yoga cult; and he promised me seriously, as soon as he should have attained the marvellous powers, to visit me in what was at that time my professional residence, Kõnigsberg, i. e., to transport himself by mere force of will to my study in that city. Unfortunately I was prevented from hold-

ing the good Mohanlâl to his word by the fact that he died of the cholera in Benares a few weeks after my departure.

Whenever the Yogins, by means of practising the Yoga procedure, fell into hypnosis and catalepsy, the people at first very naturally regarded them as dead; and when thereafter the Yogins awoke again into life, it is just as easy to understand that they were treated with the greatest veneration and regarded as saints. This pleased the Yogins,—for vanity is one of the most conspicuous national characteristics of the Indians,—and accordingly many among them probably postponed the attainment of the highest goal. For there was plenty of time left, by means of the sharp distinction of matter and spirit and the other prescribed methods, to burst the bonds of metempsychosis. Accordingly many Yogins probably endeavored, by increasing perfection in hypnotic methods and the prolongation of the cataleptic state, to attain the repute of ever greater sanctity and miraculous power. In this way, in my opinion, catalepsy or lethargy—the particular name is unimportant—became in India a sort of sport or profession. I find in Braid, *Observations on Trance*, p. 27, another but improbable explanation of this fact. On the authority of some Persian writer Braid assumes that sick Yogins, in order to escape the common fear of dissolution, put themselves into a hypnotic condition and had themselves delivered in this state to the grave which was to be their final resting-place on earth.

"Now it appears to me no very improbable supposition to allege, that accident had revealed to them the fact, that some of those who were thus buried might be restored to life after exhumation,—the action of the air restoring respiration and circulation, on an accidental disinterment of the body of some one thus interred; and the fact once observed would encourage others to try how much they could accomplish in this way, as the newest and most striking achievement which they could perform in token of the divine origin and efficacy of their religion over that of all others."

This whole attempt at explanation is unacceptable for the simple reason that the customary method of disposing of the corpse among the Hindus is not burial but burning.

From the beginning of the eighteenth century we have in the

Cérémonies et Coutumes religieuses des Peuples Idolâtres, II, 1 (Amsterdam 1728) p. 8, a report concerning Indian ascetics who took turns in being buried, and remained nine or ten days in the grave without changing position or taking food or drink. "Air and light they received only through a very small hole." This last item is of especial importance, because, while indeed we have to do in these reports with the burial of Yogins, yet it was a burial in which there was provision for the introduction of at least a slight amount of air.

Now, however, I come to the real subject of my discussion, the actual burial alive, i. e., to the fact that a Yogin could have himself buried under the earth in a sack or a closed box, without any device whatever for furnishing him air. The writings of spiritists and theosophists on this point attempt to give the impression that this performance is a familiar occurrence in India. In opposition to this view, Prof. Ernst Kuhn has shown with certainty in the article above mentioned, p. 483, that all the reports of this striking phenomenon are derived from the extraordinary performances of a single man, who toward the end of the second decade and during the third decade of the last century[1] repeatedly allowed himself to be buried in Râjputânâ, in Lahore, and once also in Hindustan proper, of course always for good compensation. This was the Yogin Haridâs, a man who from especial adaptability and by long training had succeeded in prolonging the catalepsy observed in other Yogins to a quite abnormal extent. This man succeeded in suspending his vital functions for forty days and remaining under the earth that length of time. I repeat that no case of actual inhumation has been reported before the case of Haridâs, and that no similar case has been authenticated later, since 1837. Since then search has been made in India, and especially in the northwest of the peninsula from which Haridâs came, for a man with the same powers, but in vain. But in the case of Haridâs himself the repeated inhumation is so well authenticated that there is no room for doubt about it. From the circumstances

[1] Professor Garbe, according to the decision of the German Bundesrath, reckons the year 1900 as the first of a new century.

of the case jugglery is quite out of the question, apart from the fact that according to my experience the Indians do not at all deserve the reputation of being skilful jugglers.

Braid describes four cases in the work before cited, p. 10 ff. The name of the Yogin who was buried and came to life again is not here given; he speaks merely of "the fakir who could have himself buried alive." But from another description, to be mentioned later, of the case first reported by Braid we learn the name of Haridâs and some details about his life. In the four cases described by Braid, Haridâs passed 3, 10, 30 and 40 days respectively in the grave.[1]

There is a peculiar interest attaching to the case last mentioned by Braid, in which the burial was for only three days. It was in the year 1828 at Concon that the English major in command of the military station there was visited by a member of the native judiciary who asked permission for "one of his holy countrymen" to be buried alive for nine days within the bounds of the military cordon. After resisting for some time the major yields to repeated requests—for the holy man laid great weight upon the permission to make his experiment within the military territory, since he could thus give better proof that there was no fraud involved than if it were done elsewhere—and gives consent, declaring at the same time that he would take all necessary measures to prevent any possible deceit. Thereupon the "holy man" is buried (without a coffin, but wrapped in a sheet of camel's hair) in an open field in the

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[1] Raja Dhyan Singh, at that time the prime minister of the Maharaja Runjeet Singh of Lahore, told (see Honigberger, *Früchte aus dem Morgenlande*, p. 137) that he had kept the man buried under ground for four months in Jemu in the mountains, and that he had his beard shaved on the day of the burial; at the exhumation and revival his chin was as smooth as on the day of the burial. I regard both these reports, the length of the period as well as the matter of the beard, as fabrications. Nothing that is reported by natives about these occurrences has any value for one who knows the unreliability of the modern Indians. We must rely entirely upon the accounts of the high English officers and officials who were witnesses of the performances. For this reason I do not consider the reports of cases in N. C. Paul's *Treatise on the Yoga Philosophy* (Benares, 1851; third edition, Bombay, 1888). The author was a native, Navina Chandra Pala, who tried by Europeanising his name to make himself pass for an Englishman.

presence of perhaps one thousand Indians, being laid into a grave from three to four feet deep dug in the usual way and having the customary dimensions. A guard of Mohammedans was placed at the grave with orders to prevent any approach to the same; and this guard, which was relieved every two hours, followed orders so strictly that they did not permit one of the hated Hindus to take "even a crumb of the consecrated soil which covered the holy man (a priceless boon in their esteem)." But near at hand were many Hindus watching anxiously lest the Mohammedan guards should play some trick upon their holy brother. Thus the strong religious antipathy of the two parties afforded the best means of preventing any deception. Three days passed. Then, when at evening report was made to the major that the guard had been relieved and that all was as it should be at the grave, the thought occurred to him that the probable death of the man who had been buried alive might have very disagreeable consequences for himself. Fearful of losing his position and of being called into court as accomplice in the murder of a man, he gives orders for his immediate exhumation. The Brahman who had obtained the major's permission for the burial of the holy man comes and tries to pacify the major by assuring him that the holy man had often been buried in the same manner without suffering harm; and he begs the officer earnestly to wait the nine days agreed upon. But the latter refuses and hastens mounted and in ever-growing anxiety to the field. In the presence of an immense multitude the grave was excavated and to the horror of the major the inmate brought forth cold and stiff. When the major had satisfied himself of the condition of the body by feeling it, he had no longer any doubt of his misfortune. At this point two disciples of the buried man came forward and proceeded to rub his head, eyes, hands and feet, and especially the region of the heart with an ointment. For a quarter of an hour the rubbing was without result, but then signs of life were recognised, and at the end of an hour the resurrected man was once more in possession of his physical and mental faculties, and acknowledged the homage and the presents of the Hindus, while the major left the place, happy that his fears had proven groundless.

The description of another burial of Haridâs is found in the *Calcutta Medical Journal* of 1835, which I have been unable to consult. But the most detailed and instructive description is that of the first case in Braid, reported by Sir Claude Wade, at that time British Resident at the court of Maharajah Runjeet Singh, of Lahore. This case comes from the year 1837, while the preceding one is from the year 1828; and it is interesting that Haridâs had so perfected himself in these nine years that he could now be buried not simply for nine days, but for forty. It also deserves comment that the Maharaja of Lahore was altogether sceptical when the holy man resorted to him and offered to have himself buried for six weeks, and that he took every possible precaution to avoid the possibility of fraud. Since the details themselves are of most importance here, I cannot do better than print word for word that part of Wade's report with which we are concerned. Sir Claude Wade writes to Dr. Braid as follows regarding the exhumation of the man who had been buried forty days before (Braid, *Observations on Trance*, p. 11 ff.):

"On the approach of the appointed time, according to invitation, I accompanied Runjeet Singh to the spot where the fakir was buried. It was in a square building, called a barra durra, in the middle of one of the gardens, adjoining the palace at Lahore, with an open verandah all round, having an enclosed room in the centre. On arriving there, Runjeet Singh, who was attended on the occasion by the whole of his court, dismounting from his elephant, asked me to join him in examining the building to satisfy himself that it was closed as he had left it. We did so; there had been a door on each of the four sides of the room, three of which were perfectly closed with brick and mortar, the fourth had a strong door, which was also closed with mud up to the padlock, which was sealed with the private seal of Runjeet Singh in his own presence, when the Fakir was interred. Indeed, the exterior of the building presented no aperture by which air could be admitted, or any communication held by which food could be conveyed to the fakir. I may also add, that the walls closing the doorway bore no mark whatever of having been recently disturbed or removed.

"Runjeet Singh recognised the seal as the one which he had affixed, and as he was as sceptical as any European could be of the success of such an enterprise, —to guard as far as possible against any collusion,—he had placed two companies from his own personal escort near the building, from which four sentries were furnished and relieved every two hours, night and day, to guard the building from

intrusion. At the same time, he ordered one of the principal officers of his Court to visit the place occasionally, and to report the result of his inspection to him, while he himself, or his Minister, kept the seal which closed the hole of the padlock, and the latter received the report, morning and evening, from the officer of the guard.

"After our examination, we seated ourselves in the verandah opposite the door, while some of Runjeet Singh's people dug away the mud wall, and one of his officers broke the seal and opened the padlock. When the door was thrown open, nothing but a dark room was to be seen. Runjeet Singh and myself then entered it, in company with the servant of the fakir, and a light being brought, we descended about three feet below the floor of the room, into a sort of cell, where a wooden box, about four feet long by three broad, with a sloping roof, containing the fakir, was placed upright, the door of which had also a padlock and seal similar to that on the outside. On opening it we saw a figure enclosed in a bag of white linen, fastened by a string over the head—on the exposure of which a grand salute was fired, and the surrounding multitude came crowding to the door to see the spectacle. After they had gratified their curiosity, the fakir's servant, putting his arms into the box, took the figure out, and closing the door, placed it with its back against it, exactly as the fakir had been squatted (like a Hindoo idol) in the box itself.

"Runjeet Singh and myself then descended into the cell, which was so small that we were only able to sit on the ground in front of the body, and so close to it as to touch it with our hands and knees.

"The servant then began pouring warm water over the figure; but as my object was to see if any fraudulent practices could be detected, I proposed to Runjeet Singh to tear open the bag, and have a perfect view of the body before any means of resuscitation were employed. I accordingly did so; and may here remark, that the bag, when first seen by us, looked mildewed, as if it had been buried some time. The legs and arms of the body were shrivelled and stiff, the face full, the head reclining on the shoulder like that of a corpse. I then called to the medical gentleman who was attending me to come down and inspect the body, which he did, but could discover no pulsation in the heart, the temples, or the arm. There was, however, a heat about the region of the brain, which no other part of the body exhibited.[1]

"The servant then recommended bathing him with hot water, and gradually relaxing his arms and legs from the rigid state in which they were contracted, Runjeet Singh taking his right and I his left leg, to aid by friction in restoring them to their proper action; during which time the servant placed a hot wheaten cake, about an inch thick, on the top of his head,—a process which he twice or thrice re-

[1] Might not this "heat about the region of the brain" have been caused by the warm water poured over the head imparting the greatest degree of heat to the part with which it came first in contact?—J Braid.

newed. He then pulled out of his nostrils and ears the wax and cotton with which they were stopped; and after great exertion opened his mouth by inserting the point of a knife between his teeth, and, while holding his jaws open with his left hand, drew the tongue forward with his right,—in the course of which the tongue flew back several times to its curved position upwards, in which it had originally been, so as to close the gullet.

"He then rubbed his eyelids with ghee (or clarified butter) for some seconds, until he succeeded in opening them, when the eyes appeared quite motionless and glazed. After the cake had been applied for the third time to the top of his head, the body was violently convulsed, the nostrils became inflated, when respiration ensued, and the limbs began to assume a natural fulness; but the pulsation was still faintly perceptible. The servant then put some of the ghee on his tongue and made him swallow it. A few minutes afterwards the eyeballs became dilated, and recovered their natural color, when the fakir, recognising Runjeet Singh sitting close to him, articulated in a low sepulchral tone, scarcely audible, 'Do you believe me now?' Runjeet Singh replied in the affirmative, and invested the fakir with a pearl necklace and superb pair of gold bracelets, and pieces of silk and muslin, and shawls, forming what is called a khelat; such as is usually conferred by the Princes of India on persons of distinction.

"From the time of the box being opened, to the recovery of the voice, not more than half an hour could have elapsed; and in another half-hour the fakir talked with myself and those about him freely, though feebly, like a sick person; and we then left him, convinced that there had been no fraud or collusion in the exhibition we had witnessed."[1]

This careful account may be supplemented in some important respects from Honigberger's rather odd book, *Früchte aus dem Morgenlande* (Wien, 1851), p. 136 ff. Johann Martin Honigberger, a physician from Siebenbürgen, came in the course of his adventurous life to Lahore, where he rendered such valuable services as personal physician to Maharaja Runjeet Singh and his successors that the English government granted him a pension on his return. It happened that Honigberger was in Europe just at the time of

[1] "At a subsequent interment of this fakir, besides all the precautions enumerated above as resorted to on that occasion, after the box containing the fakir was deposited in the cell, locked and sealed, earth was turned in and trodden down, so as completely to surround and cover the box; a crop of barley was sown over it; and a constant guard maintained on the spot. Moreover, twice during the period of interment, Runjeet Singh had the body dug up, when it was found to be exactly in the same position as when interred, and in a state of apparently entirely suspended animation. At the expiration of this prolonged interment, the fakir recovered under the usual treatment."—*B.* (p. 16, note).

the remarkable performances at the court of Runjeet Singh here narrated. When he returned to Lahore in 1839 he was told by the English general Ventura and other credible persons of the astonishing experiment of which they had been witnesses in his absence. Honigberger also reports that among the Englishmen present at the exhumation of the Yogin, who had come partly from neighboring places, there was a physician—evidently the medical attaché of the British political embassy mentioned by Sir Claude Wade. Honigberger gives on plate VII a picture of Haridâs, after what is declared to be an excellent portrait given Honigberger by a Captain Gardner; and according to this picture the Indian habitual or professional expirer looks like quite a cheerful fellow. Honigberger's account of the burial and resuscitation of Haridâs has been reproduced lately in the Introduction to a small Indian publication, an edition with English translation of the Gheraṇḍa Saṃhitâ (Bombay, 1895), with the aforementioned portrait of Haridâs prefixed, the account following the English edition of Honigberger's book, which appeared in London in 1852 under the title, *Thirty-five Years in the East.*"

According to Honigberger's account, which is based chiefly on the testimony of General Ventura, the following were notable among Haridâs's preparations for his burial. When Haridâs began to train for his strange profession he cut the ligament of his tongue, as other Yogins are accustomed to do, and induced an elongation of this member by continual pulling and rubbing with certain substances. The holding of the breath is treated in all Yoga texts as a chief feature in the Yoga procedure; years are spent in learning to hold the breath for ever longer periods.[1] Haridâs must have at-

[1] Cp. the accounts in the *Dabistan*, a Persian work on the religious sects of India, quoted by Braid, p. 9. I find in Braid's paper also the following interesting observations: "As a result of the fixing of the attention, and after steady gazing at any object, no matter what, there develops most remarkably a condition which deserves much attention, and which I bring about artificially, in case it does not ensue spontaneously, and this is, the suppression of respiration. The effect of the suppression of respiration upon the quantity of oxygen in the blood and the prevention of the throwing off of carbonic acid gas doubtless play an important part, as they may cause slight organic changes, by which the hypnotic condition is first established."

tained great ability in this direction also before he made the experiment with his tongue.

As for the immediate preparations for the burial, Haridâs took an aperient several days beforehand, and thereafter took no food but milk. On the day of the burial he slowly swallowed a strip of cloth three fingers wide and over thirty yards long, and then pulled it out of his throat. This performance was for the purpose of cleansing the stomach of all foreign materials. Thereupon Haridâs seated himself in a tub with water up to his armpits and by means of a tube filled the rectum with water in order to thoroughly cleanse it. After this was done Haridâs stopped all the openings of the body with plugs made of an aromatic wax, put his tongue folded back in the way hitherto described into the back of his mouth, folded his arms over his breast and fell asleep. All this was done in the presence of a great multitude. Haridâs now presented the appearance of a corpse. He was wrapped in the linen cloth on which he had been sitting, which was then tied together and sealed with the seal of Runjeet Singh, the Maharaja. Then the body was laid into a chest, upon which the Maharaja himself fastened a heavy lock. The burial of this chest, the guarding of the vault about the grave by military pickets, the exhumation on the fortieth day and the resuscitation of the cold and stark body is told by Honigberger in the same way as by Sir Claude Wade. The two reports are entirely independent of each other; Honigberger did not know the report of Wade, which is far clearer and more intelligently written, and which Braid had published a year before the appearance of Honigberger's book, that is at a time when the latter was surely in manuscript, and probably partly printed.

In Honigberger's account of the resuscitation of Haridâs there is one other detail, which probably has no especial significance. After the tongue had been restored to its normal position and the wax plugs had been taken out of the ears, air was blown into his throat and ears, whereby the wax plugs were blown out of the nostrils with some noise. This was regarded by the natives as the first sign of returning life.

From the preparation for his burial which Haridâs made in

the way of stopping up air passages it is evident that he himself was convinced of the complete cessation of respiration during his cataleptic torpor. Here he was in error, for the absolute cessation of respiration for so long a time would have meant the end of life. A medical colleague kindly informs me that such a stoppage of the air passages as is reported in the case of Haridâs is not tight enough to stop all admission of air, aside from the fact that the organs of respiration are not the only means of breathing, but that the skin also serves this end, and further, that even through three or four feet of earth and a closed box enough air may pass for the preservation of life when reduced to its lowest limit, the so-called *vita minima*.

W. Preyer, *Ueber die Erforschung des Lebens* (Jena, 1873), p. 28 ff., mentions the astonishing performances here discussed in connexion with the fact that plant seeds of the most varied sorts, after being preserved dry for many years, centuries and even millenniums, germinate when put into water or moist earth; and that low animal organisms, tardigrades and the like, may lie for a long time dried up and altogether without metabolism, and yet revive under favorable conditions; and that frogs and fish that have been frozen in solid revive to normal life if thawed out gradually. But Preyer adds, that it is a question whether the condition of the buried Yogins is not a lethargy similar to the hibernation of mammals, rather than a real and complete cessation of metabolism like that of frozen animals or of infusoria and arctiscoids. This question is to be answered in the affirmative,[1] and Braid himself not only compared the catalepsy of the Yogins with the hibernation of animals, but actually used the expression "human hybernation." Nevertheless, while the two conditions may be regarded as similar they are not identical, and that for the following two self-evident

[1] It is left open by Preyer as well as by Max Verworn, who discusses in his *Allgemeine Physiologie* (Jena, 1895), p. 190 ff., the phenomena of voluntary trances, citing the burial of Indian fakirs reported by Sir Claude Wade and the case of Colonel Townsend (*postea* p. 497). And yet the question is decided by the great emaciation observed in Haridâs at his exhumation (to be referred to later); for we must conclude from this that metabolism did not cease during his interment but went on, though in greatly reduced intensity.

reasons. In the first place, the hibernation of animals ensues involuntarily, while the trance of the Yogins is induced voluntarily. In the second place, hibernation is chiefly dependent on cold, since in the case of animals which under normal conditions fall into this state at the entrance of the cold season it can be prevented by residence in a higher temperature, and since animals in a state of hibernation can always be roused by artificial warmth. In the catalepsy of the Yogins the temperature plays no part, or if at all, in an entirely different way; thus my medical adviser believes that the experiment of burying alive as performed by Haridâs would not have been possible in our climate, but only in a hot country like India, where the heated earth gave to the torpid body of the buried man the degree of warmth necessary for the preservation of life under such abnormal conditions.[1] But on the other hand the artificial trance of the Yogins has the following important features in common with the hibernation of animals: the extraordinary reduction and retardation of respiration and heart action, as well as the consumption of fat and of other tissues. Much as it is to be regretted that no exact weights of Haridâs were noted before and after the burial, it can be asserted with absolute certainty that Haridâs during the period of his cataleptic torpor lived on his own tissues, as is the case with hibernating animals, and that the trance would gradually have merged into real death when the man had once consumed all his surplus tissues. Forty days is the longest attested period that Haridâs passed under ground, and with this he had probably reached the limit of his capacity. It proves nothing that Haridâs himself was confident of his ability to endure burial for a much longer time. In the year 1835 two English officers, Lieutenant Boileau and Lieutenant Trevelyan, were witnesses of a

[1] The same opinion has been uttered by W. B. Carpenter in his essay "On the Psychology of Belief," *Contemporary Review*, Vol. XXIII (December, 1873), p. 134: "And that such a state [of "suspended animation" or "apparent death"] might be maintained in India under the circumstances described, for a much longer period than in this country, may be fairly attributed to the warmth of the tropical soil, which will prevent any considerable reduction of the temperature of the body buried in it, notwithstanding the almost entire suspension of its internal heat-producing operations."

burial of Haridâs for thirty days. After the resuscitation of the buried man they were struck by his greatly sunken abdomen,—an analogy to the fact that animals coming out of hibernation are always very much emaciated;—Haridâs manifested also great weakness, though he said straightway to the English officers that they might if they chose bury him again right away for a full year. If this experiment had been made it would certainly have caused the death of the experimenter.

Let us now ask what means Haridâs used to bring about his torpor. We shall have to consider here chiefly a procedure which has been described by the Viennese clinician L. Schrötter in a passage to which Ernst Kuhn has called the attention of Sanskrit scholars. Schrötter says in H. von Ziemssen's *Handbuch der speciellen Pathologie und Therapie*, second edition, VI. 311, in the section on disturbances of the motility of the heart: "The trick of the Indian jugglers in voluntarily retarding the action of the heart, has now been explained by Donders, who showed that he could stop the action of the heart by the voluntary contraction of the muscles of the neck which are supplied by the spinal accessory nerve, since by the stimulation of the branches of the nerve in these muscles the branches controlling the heart are at the same time affected." In this way, it is most likely, the experiment of Colonel Townsend is to be explained, which excited attention in its day and is discussed by Braid, p. 8, as well as by W. B. Carpenter, in the *Contemporary Review*, Vol. XXIII., December, 1873, p. 135: "... the standard case of Colonel Townsend, which no medical authority has ever ventured to call in question, so high was the authority of Dr. Cheyne, the eminent physician, by whom it was recorded." The achievement of Colonel Townsend, who paralleled the already described performances of the Indian Yogins, and of whom it was said that he could die at will, i. e., cease to breathe, was once observed by three physicians together. Braid gives the following, after the report of Dr. Cheyne, a Dublin physician of high standing in his day: "He insisted so much on us seeing the trial made, that we were at last forced to comply. We all three felt his pulse first; it was distinct, though small and thready, and his heart had its

usual beating. He composed himself on his back, and lay in a still posture for some time; while I held his right hand, Dr. Baynard laid his hand on his heart, and Mr. Skrine held a clean looking-glass to his mouth. I found his pulse sink gradually, till at last I could not feel any, by the most exact and nice touch. Dr. Baynard could not feel the least motion in the heart, nor Mr. Skrine perceive the least soil of breath on the bright mirror he held to his mouth. Then each of us by turns examined his arm, heart, and breath, but could not, by the nicest scrutiny, discover the least symptom of life in him. We reasoned a long time about this odd appearance as well as we could, and, finding he still continued in that condition, we began to conclude that he had indeed carried the experiment too far; and at last we were satisfied that he was actually dead, and were just ready to leave him. This continued about half an hour. By nine in the morning in autumn, as we were going away, we observed some motion about the body, and, upon examination, found his pulse and the motion of his heart gradually returning; he began to breathe heavily and speak softly. We were all astonished to the last degree at this unexpected change, and, after some further conversation with him, and among ourselves, went away fully satisfied as to all the particulars of this fact, but confounded and puzzled, and not able to form any rational scheme that might account for it." However, I am assured that modern medical science possesses the means for recognising the respiration and heart action even when reduced to such a minimum.

Even though the case of Colonel Townsend proves that the voluntary catalepsy observed in India occurs also in Europe, the question still remains, by what means the guild of Indian Yogins, and particularly Haridâs, produced the extraordinary prolongation of the cataleptic state, and whether the difference of race has anything to do with the matter. It is quite probable that Haridâs had some special secret, and that he always took some strong narcotic before he put his tongue back into his throat and threw himself into catalepsy. The conjecture has been expressed several times that some preparation of Indian hemp was used; Ernst Kuhn has recently supported this conjecture by a number of reasons, and at

the same time shown the probablility that the effect of the hemp preparation was strengthened for the purposes of the Yogins by the combination with stramonium and henbane.

Inasmuch as Haridâs was without doubt an abnormal personality from a physiological point of view, the scant notes which Honigberger gives of his life are of some interest. Haridâs was born in the vicinity of Karnal, and led a roving life after he discovered his career. The worship he enjoyed in Lahore at the zenith of his reputation as a saint, must have gone to his head; for his behavior began to give such offence there that the Maharaja Runjeet Singh seriously considered banishing him from the country. The "holy man" anticipated this command by leaving of his own accord—not alone, however, but with the wife of another. Until that time there had been a report that Haridâs was a eunuch or a hermaphrodite. But the fact that he eloped with a young woman was regarded as evidence that this report was unfounded. Haridâs died soon after his flight, "in good earnest" somewhere in the mountains, and was burned according to the custom of the country.

A legend reports (Honigberger, p. 140) that a Yogin in Amritsar three hundred years ago was found buried under ground in a sitting posture, together with directions for resuscitating him. After his resuscitation this Yogin reported events from his early life, which referred to events of a hundred years before. Of course this is only a legend such as are found in plenty among other races, and has nothing to do with the extraordinary performances of Haridâs. I do not doubt that some of my readers will simply deny the facts here reported, and regard themselves as very keen and critical for so doing. They are heartily welcome to this agreeable feeling. When James Braid published fifty years ago his famous essay on the subject here discussed, the worthy man uttered (p. 55) with the calm superiority which is so befitting to a positive scholar, the following propositions which are good to-day and always will be: "I am well aware, that there were individuals in this country, as well as elsewhere, who hastily published observations, from limited data, pronouncing the whole of these feats of the fakirs as mere Hindoo tricks; and, consequently, who will now feel themselves

bound in self-defence, to stand by their former verdicts. I know human nature too well to expect to extort a confession of conviction to the contrary from such individuals, by any amount of evidence which could possibly be adduced, even if they were permitted to be eye-witnesses of the facts themselves.—'Unlimited scepticism is equally the child of imbecility as implicit credulity.'"

RICHARD GARBE.

TÜBINGEN.

SAINT PAUL AND APOSTOLIC SUCCESSION.

THE doctrine of Apostolic Succession is a very important factor in church-life. According to the Greek, Roman Catholic, and Anglican Churches, the uninterrupted succession of bishops, elders, and deacons from the apostles down to the present time forms an essential part of Christ's religion. They consider it as their chief guarantee of enjoying full and unqualified possession of Christ's truth. Most Protestant Churches on the other hand hold that religious truth does not depend upon such an outward sign, but that it appeals directly to the human mind whenever and by whomsoever it is pronounced. To them the form of church-government is merely a matter of expediency and may be altered as often as it appears desirable to meet changed conditions of human life and society.

Such conflicting views render it imperative for theology, in so far as it is a historical science, to ascertain what kind of government the original Church of Christ had, and whether the so-called apostolic orders are really the direct successors of the apostles. Theologians have been very active in this line of research during the last fifty years, and especially since 1883. In that year Philotheus Bryennius published for the first time the text of the *Teaching of the Twelve Apostles*, also known as the *Didache*, that word being the Greek equivalent of the English noun "Teaching" and appearing in the original title. The last chapters of this old church-manual throw a flood of light upon the much mooted question. As the most prominent representatives of the scholars that have engaged in these studies may be named J. B. Lightfoot, Edwin Hatch, and Adolf Harnack.

Still the problem is very far from being definitely solved; and as it certainly concerns the general public, it appears not inappropriate to discuss one of its principal features, namely, the relation of Saint Paul to the Apostolic Succession. "The Apostle of the Gentiles" is the central figure of the Apostolic Age, the father of all the Christian Churches which exist at present. Analysing therefore his position may in some respects produce better results than the methods which are usually followed.

The natural starting-point is a historical definition of the term "Apostle" as the title of the first twelve disciples of Jesus of Nazareth as well as of Saint Paul. There may be such as imagine that it is entirely superfluous and even indicative of irreverence to examine the ground on which Saint Paul's apostleship rests. But it is absolutely necessary to do so. For Saul of Tarsus was not a personal disciple of Jesus; and the Twelve were selected by the Lord, before Saul had become aware of his existence. Now, we have to assume either that the number of apostles was strictly limited and was either twelve or thirteen; or that the number of apostles was unlimited. In the first case Saint Paul must have become either one of the Twelve, the substitute of Judas Iscariot, or the thirteenth apostle, while in the second case we must be able to demonstrate that the Apostolic Church recognised many more apostles. These two possibilities imply of course two different definitions of what constitutes an apostle. A quotation from Lightfoot will perhaps serve to render this more distinct. He says:[1]

"At the first institution of the office the Apostles were twelve in number. According to the prevailing view this limit was strictly observed, an exception however being made in the case of St. Paul. Nay, so far has the idea of this restriction of number been carried by some, that they hold the election of Matthias to have been an ill-advised act, and to have been subsequently reversed by an interposition of God, St. Paul being substituted in his place."

It cannot be denied that the very fact of Saint Paul's apostolate presents quite a difficulty. His position as to the Twelve has to be explained, and to that end it is necessary to examine carefully

[1] *Epistle to the Galatians*, p. 94.

the New Testament references from which a clear conception of the task and prerogatives of the original apostles may be gained.

The passages conveying information concerning this point are but few. Yet they are sufficient in assisting us to arrive at final conclusions. The first fact which is universally acknowledged is that the Twelve were called by Jesus of Nazareth in person. It may, however, be doubted whether he called them one by one in succession, till their number was complete, or whether he chose them in a body from a greater circle of adherents. In support of the first view Matt. iv. 18–22 and Matt. ix. 9–10 may be cited, while the second could be based on Mark. iii. 16–19 and Luke vi. 13. This difference is, however, of comparatively little importance, and attention is here called to it simply for the purpose of showing that the Gospels contain numerous statements which contradict and even exclude one another. These differences make it highly probable that the historical books of the New Testament have been compiled from various sources and invite us to separate them, if possible, into their original elements in order to be enabled to pass judgment on their respective value as sources of history. The chief reason for mentioning this is my desire to emphasise the fact that we shall in the course of this investigation frequently encounter passages opposed to each other, and that in such instances we shall be compelled to decide in favor of one or the other on general principles.

Jesus himself either called or selected the Twelve. But it is extremely doubtful whether he himself designated them as apostles. In the Gospels the original apostles are as a rule called "The Twelve," or "The Disciples." In John the word "apostle" occurs but once, John xiii. 16, and there the term is not applied to the Twelve. In each Matthew and Mark it is used only once of the Twelve. In Luke vi. 13 alone we find the direct statement that Jesus called the Twelve: Apostles. The exact words are: "whom also he named apostles." But both the word "also" and the rather uncommon term "named," instead of called—the Greek verb used is *ὀνομάζω*—seem to indicate the hand of an interpolator. It is accordingly very probable that the title of "Apostles" was given to

the Twelve not by their master, but by their disciples. That is to say, the term has been applied to them not in order to express the peculiar relationship existing between them and their Lord as his personal disciples, on account of which they occupied a place quite apart from almost all other Christians even in the Apostolic Age, but in order to designate them as messengers and representatives of Jesus Christ. If that is to be admitted as true, the title belongs with the same right to all other Christians who acted and still act in the capacity of messengers and representatives of their master in the same manner as the original apostles.

Jesus invited the Twelve to follow him, because he intended to train them for the ministry of the gospel. For that reason he carefully instructed them in the truth of God's kingdom, as it had been revealed to him, laying upon them the injunction that they should proclaim it in turn to others. He also endowed them, according to Mark iii. 15, with the power of casting out demons,[1] or, according to Matt. x. 8, of curing diseases, restoring the dead to life, cleansing lepers, and casting out demons. In numerous passages of the Acts, compare for instance Acts i. 22, the task of the Twelve is stated to consist in bearing witness of Christ's resurrection. We may therefore safely assume that the gift of healing was deemed by the author of the Acts but an incidental quality of the Apostles, whereas preaching Christ's Gospel was their real calling. For the witness of their master's resurrection included as a matter of course information as to the life and teaching of Jesus Christ whenever the audience was not acquainted therewith. It is unnecessary to explain in detail that the Twelve had to become itinerant preachers in obedience to their calling. The shortest and least misleading definition of the term "Apostle" is accordingly the following: *An apostle is an itinerant preacher.* In order to prove the absolute correctness of this definition it must of course be shown that in the Apostolic Age all itinerant preachers were called apostles.

With the exception of this definition all will agree as to the

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[1] The highest and most authoritative textual critics, as Tischendorf, Tregelles, Westcott, and Hort, omit Mark iii. 15, "to have power to heal sicknesses and."

special vocation of the Twelve. It remains to be seen among whom Jesus wanted them to labor for his kingdom. According to Matt. x. 5–6 he instructed them expressly: "Do not depart into the way of the Gentiles, nor enter a town of Samaritans, but go rather to the lost sheep of the house of Israel." They were to work exclusively among the Jews. That commandment perfectly agrees with the well-known and clearly-stated position of Jesus as to the Gentiles. He told his disciples Matt. xv. 24: "I am sent alone to the lost sheep of the house of Israel," and the woman of Canaan in the same passage: "It is not right to take the bread from the children and cast it to the dogs." To this class of utterances belongs also Matt. vii. 6: "Do not give that which is holy to the dogs, nor cast your pearls before the swine!" The words "dogs" and "swine" in the mouth of a Jew denoted contemptuously the heathen, because they lived as dogs[1] and ate pork. That Jesus shared or at least acknowledged to such a degree the national prejudices of his countrymen may appear impossible and scandalising to many who know him only as the savior of all mankind. But the fact that such was actually the case cannot be denied. We have to recognise here the same Jesus who Matt. v. 17–19 states:

> "Do not think that I have come to dissolve the law or the prophets. I have not come to dissolve but to fulfill. For verily I say unto you, until heaven and earth disappear, not a single jot nor tittle of the law shall disappear, until everything has happened. Who now destroys one of the least of these commandments and teaches the people thus shall be called the least in the kingdom of heaven But who observes and teaches them he shall be called great in the kingdom of heaven."

It is not my intention to explain here the apparent discrepancy between such utterances of Jesus and the fact that he is believed by the foremost nations to be the Messiah of the whole world. My present aim is to emphasise that Jesus considered himself first of all as the Messiah of his own nation, and that he forbade his original disciples to carry his message to Gentiles and Samaritans. This fact

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[1] Cf. Deut. xxiii. 18, "Thou shalt not bring the price of a dog into the house of the Lord thy God for any vow." Dog, in this passage, is *puer mollis*. The Hebrew word is קָדֵשׁ.

is further confirmed by the significance of their number. Jesus selected twelve disciples and foretold them Matt. x. 23: "Verily I say unto you: You shall not finish the cities of Israel, before the Son of Man shall come," because the people of Israel was supposed to consist of twelve tribes. That this is the true significance of the number is directly attested in Matt. xix. 28, which reads: "Verily I say unto you that at the regeneration when the Son of Man shall sit on his throne of glory, you who have accompanied me shall also sit on twelve thrones judging the twelve tribes of Israel."

No Bible-student will deny the force of the preceding argument, but almost all of them attempt to modify it in some way or other. Lightfoot, for instance, tells us that the Twelve were "*originally* the Apostles of the Circumcision, the representatives of the twelve tribes." The italics have been introduced by me to render it quite clear that Lightfoot desires us to believe that the Twelve afterwards ceased to restrict themselves to missionary labor among their own countrymen. K. Schmidt writes:[1]

"The activity of the Twelve has not remained confined to the field of the Circumcision. The New Testament indeed offers nothing certain concerning their missionary work among Gentiles, and the legends of their scattering over the countries of the earth, which they had divided among themselves as mission-fields, are entirely unconfirmed. But it has been ascertained that towards the end of Saint Paul's life, Saint Peter exercised through personal intercourse as well as through epistles influence among the Gentile Christians, and that, after Saint Paul's death, Saint John succeeded to the position of leader of the Gentile Christians."

We find indeed Matt. xxviii. 18–20 the commandment: "Go and teach all the Gentiles, baptising them in the name of the Father and of the Son and of the Holy Ghost, teaching them to observe all whatsoever I commanded you." These words are said to have been spoken by Christ, when after his resurrection he took final leave of his disciples. They are directly and unmistakably opposed to his former injunction not to go to Gentiles and Samaritans; and we must take it for granted that the Twelve obeyed the new commandment to the very letter. It was given on such an extraordinary occasion that they could never forget it. Nor could they doubt its

[1] Hauck's *Realencyklopädie*.

absolute validity. For, if the human Christ had ever had authority with them, their risen and glorified Lord must command implicit faith. Disobedience, and even hesitation, were excluded. Consequently we expect to see the Twelve start immediately on missionary expeditions not alone to Jewish, but also to Gentile, communities and countries.

Instead of that, the Twelve stayed at Jerusalem preaching only to Jews, just as if the commandment of Matt. xxviii. 18–20 had never been given. Even Saint Peter's Pentecost sermon is addressed not to all nations, both Jews and Gentiles, but, according to Acts ii. 14, to Jews and the inhabitants of Jerusalem, according to verse 22, to Israelites, according to verse 36, to the whole house of Israel. No trace of Gentile hearers is to be discovered in the words of Saint Peter on that eventful day. Moreover, we learn from the Cornelius episode, Acts ix. 32 to xi. 18, that it required a special and thrice repeated revelation from heaven to make Saint Peter accept the invitation of the Roman centurion and enter his house for the purpose of preaching Jesus Christ to him. But even that occurrence did not lead to any arrangements on the part of the original apostles for establishing a regular mission among the Gentiles. On the contrary, the very existence of Gentile congregations at Antioch, in Syria and Cilicia, which had sprung up spontaneously after Stephen's martyrdom led, many years after Saul's conversion, to a public discussion at Jerusalem of the question whether those Gentile congregation sought to be recognised as Christian congregations or not. So far for the testimony of the Acts, which is throughout supported and even rendered more pointed by that of the Pauline Epistles.

Nearly all the epistles of Saint Paul bear witness that the Apostle of the Gentiles was vehemently opposed by a certain faction of Jewish Christians, because he did not enjoin his heathen converts to observe the Jewish law. Those adversaries denied the apostleship of Saint Paul, and evidently pretended to act in the name and on the authority of the Twelve, who undoubtedly refrained from working among Gentiles. The first two chapters of the Epistle to the Galatians show that this hatred of Saint Paul

was in no wise shared by the Twelve and the other leaders of the Church of Jerusalem. But, as late as seventeen years after his conversion, while approving of Saint Paul's and Barnabas's success among the Gentiles, they claimed for themselves no other distinction than that of being apostles of the Circumcision, that is, of the Jews. Saint Paul repeats a statement to that effect not less than three times in close succession. Gal. ii. 7 reads: "They saw that the Gospel of the Foreskin was committed unto me, as the gospel of the Circumcision unto Peter," verse 8: "He that was mighty in Peter to the apostleship of the Circumcision was mighty in me to the Gentiles," and verse 9: "They gave me and Barnabas the right hands of fellowship, that we should go to the heathen and they to the Circumcision." The apostle proceeds then to relate, Gal ii. 11 ff., that Cephas came afterward to Antioch, and that he was even then afraid to be seen in company with Gentile Christians, committing thereby, as Saint Paul judges, a great sin.

The passage Matt. xxviii. 18–20 is therefore contradicted both by the Gospels and the Acts as well as the Epistles of Saint Paul and cannot contain genuine words of Jesus Christ. They have been inserted by a man who was well acquainted with the historical fact that Gentiles had been converted by apostles of Christ, and that the Christians were baptised into the name of the Father and of the Son and of the Holy Ghost; and who presumed that Jesus Christ must have given the directions which led to those results. Not finding them in the Gospel, he reconstructed them to the best of his knowledge and ability and put them where, as he imagined, they belonged. The reasons for representing the risen Christ as having spoken them are obvious. For Jesus of Nazareth had too unmistakably pronounced the contrary. It is, however, very improbable that Jesus should have waited with revoking his first commandment till after his death and resurrection, nor is it easy to believe that he himself should have introduced on that occasion the baptismal formula: "In the name of the Father and of the Son and of the Holy Ghost," which does not occur anywhere else in the Gospels. I do not at all object to that formula, but am of the opinion that it is rather an expression of the belief of the

Christian congregation than a direct testimony of Jesus Christ, and that it has as its presupposition the experiences of the day of Pentecost.

The twelve apostles were, accordingly, not only appointed originally by Christ as his messengers to the twelve tribes of Israel, but also, for at least the first twenty years after the death of Jesus, kept aloof from intercourse with Gentiles. Their proper mission-field was among the lost sheep of the house of Israel. That does not of course imply that they stayed all their life within the boundaries of Palestine. For at that period Jews were scattered over all the provinces of the Roman Empire and the adjoining countries of the East. There was hardly any large city within the confines of those countries which had not its Jewish population and its Jewish synagogue. The Twelve had to follow their countrymen everywhere. That is not only to be admitted as probable on general principles, but is directly attested in the New Testament, for instance, 1 Cor. ix. 5. On the strength of that passage the Christians at Corinth must have been well acquainted with the missionary journeys of "the other apostles and the brothers of the Lord and Cephas." Several of them, and more especially Saint Peter, must have visited the city of Corinth, which visit in turn accounts for the faction of Cephas among the Christians at that place, (cf. 1 Cor. i. 12). But since the original apostles had meanwhile grown to be ripe men and had still, as the epistles of Saint Paul demonstrate, to take into account the national and religious prejudices of their countrymen, it is very unlikely that they should ever have changed their original attitude with regard to the Gentiles. They recognised them in principle as true Christians and where they could do so without provoking opposition among their Jewish adherents, occasionally exchanged, courtesies with them, but were first of all anxious not to render themselves incapable of performing their proper task by attempting to compete with Saint Paul in preaching to Gentiles.

There is still another, more practical, but therefore not less cogent, reason which prevented them from undertaking such a thing. A discussion of that point, however, must be postponed

for the present. It has become clear that the apostle Paul cannot be numbered among the Twelve, but that he stood quite by himself, as far at least as the original apostles were concerned. From this it further follows that the bishops, elders, and deacons of the churches founded by him cannot be called successors of the Twelve Apostles, unless Saint Paul himself was a successor of the Twelve.

This question leads us to investigate the origin of Saint Paul's apostolate. For that purpose we turn to the autobiographical remarks found in his epistles, especially in the first part of that to the Galatians, as well as to the passages in the Acts treating of Saint Paul. What, however, the apostle himself states, is as compared with the testimony of the Acts, information at first hand; and since Saint Paul must be considered a trustworthy man, we are compelled to decide in favor of the Epistles wherever, with regard to events of his own life, serious differences between the Epistles and the Acts are encountered.

In the Acts Saint Paul is designated as apostle for the first time c. xiv. 14, after he had started together with Barnabas on his first western missionary expedition, in the course of which they visited the island of Cyprus and the districts of Pamphylia, Pisidia, and Lycaonia in Asia Minor. Their starting-point was Antiochia in Syria. Acts xiii. 1–3 we are told of five prophets and teachers at that city, namely, Barnabas, Simeon, Lucius, Manaen, and Saul. They were directed by the Holy Ghost to set apart two of their number, Barnabas and Saul, for what turned out to be in the end missionary work in Asia Minor and Europe. According to verse 3 Simeon, Lucius, and Manaen laid their hands upon Barnabas and Saul, before these two set out on their tour. From the fact that Saint Paul is called a prophet or teacher in Acts xiii. 1, while he appears as a full-fledged apostle in Acts xiv. 14, the conclusion has been drawn that he did not become an apostle of Jesus Christ, before he undertook his so-called first missionary journey; and the laying on of hands, Acts xiii. 3, is generally understood as being the consecration or ordination of the apostle Paul.

We are fortunately in a position to define exactly the date at which that ceremony took place. Some information concerning

the first period of Saint Paul's life after his conversion is contained in Acts ix. 1–30 and xi. 25–30. According to these passages, Saint Paul made in the course of that time two visits to Jerusalem, the first not so very long after he had become a follower of Christ, (compare Acts ix. 23 and 26–30) the second apparently just before his departure for Cyprus, Pamphylia, Pisidia, and Lycaonia (compare Acts xi. 30 and xiii. 1 ff). Now the apostle himself states in the first two chapters of his Epistle to the Galatians that he went to Jerusalem for the first time three years after his conversion and for the second time fourteen years later, or seventeen years after he had seen Christ on the way to Damascus. It is not to be doubted that, on the one hand, Saint Paul's two visits to the Church at Jerusalem, mentioned in both, Acts ix. 26 and xi. 30, and Gal. i. 18 and ii. 1, are identical and that, on the other hand, the dates of those visits as given by the apostle himself are correct. Hence the ordination of the apostle Paul occurred exactly seventeen years after his conversion and was administered at Antioch by Simeon, Lucius, and Manaen, three otherwise entirely unknown prophets and teachers of the congregation at that city.

Such an explanation, however, is apt to arouse serious doubts and strenuous objections on the part of those who believe in the necessity of apostolic succession. For it is an essential part of that doctrine that the first bishops, elders, and deacons should have been ordained by the apostles in person and not by some one else. Therefore, it is still more important that the ordination of the apostle Paul should have been performed by the Twelve. The prophets and teachers did not belong to the so-called apostolic orders and could, accordingly, not even ordain a simple deacon. We learn from 1 Cor. xiv. that any member of a Christian congregation could become a prophet without any official authorisation whatsoever. For, to be a prophet meant nothing else than to explain some point of Christian truth in presence of the congregation. Saint Paul even thinks it possible and desirable that all Christians should become prophets and urges them expressly to strive after that gift. He writes 1 Cor. xiv. 1: "Desire the spiritual gifts, but rather that you may prophesy," and verse 31: "You may all prophesy one

after another that all may learn and all may be exhorted." Wherein prophesying consisted may be learned from verses 24–25, which read as follows: "When all should prophesy, and there should enter an unbelieving or ill-informed person, he would be confuted by all, he would be examined by all; the secrets of his heart would become manifest; and thus falling on his face he would worship God, announcing that indeed God is in you." If, accordingly, Saint Paul's apostolic authority has to be based on the fact of his having been regularly ordained, it was clearly the duty of the Twelve to administer that sacrament. But, if the ceremony mentioned in Acts xiii. 3 is to be considered as his ordination, it must be declared as irregular and therefore void, a conclusion which would at the same time cast the gravest doubts upon the validity of the ordination of all those bishops, elders, and deacons who were ordained by Saint Paul as well as of that of their successors. From these conclusions, there is no escape on the ground of the Catholic doctrine of Apostolic Succession.

Brought face to face with this difficulty, we turn to the Pauline Epistles in order to discover what information we can gather there. Gal. i. 1 reads: "Paul, an apostle not through men nor by men, but by Jesus Christ and God the father who raised him from the dead." Both terms "through men" and "by men" denote in different ways the cause of which Saint Paul's apostleship was the effect. In the first case, men are the means and instruments. That is, men might have received a divine revelation to the effect that Saint Paul had been elected by God and Jesus Christ as apostle, with the injunction to communicate that revelation to Saint Paul and to all other Christians. In the second case, men are the agents. That means, certain Christians, after having become acquainted with Saint Paul, gained the conviction that he possessed in an eminent degree the gifts and qualities which belonged to the make-up of an apostle. They, therefore, encouraged and persuaded him to enter upon that career. Both these possibilities are, Gal. i. 1, most emphatically denied. Men were not in any way the cause of Saint Paul's apostleship. Jesus Christ and God the Father called him directly, without the assistance of a human mediator. Saint Paul

wrote these words, "an apostle not through men nor by men," expressly with the intention of giving the lie to his adversaries who had asserted the very opposite of him. Under these circumstances, we have either to admit that the information contained in Acts xiii. 1–3 is unreliable or to reject the usual interpretation of that passage as wrong. For, according to the latter, God would have appointed Saint Paul as apostle through the medium of his three colleagues, Simeon, Lucius, and Manaen, who received a special revelation to that effect.

The first part of the Epistle to the Galatians is still more explicit as to the true nature and origin of Saint Paul's apostolate. As apostle he was under obligation to no man. He did not apply to any one for instruction, not even to the Twelve. Thus he states, Gal. i. 11–12: "The gospel preached by me is not according to a man. For I did not receive it from a man, nor was I instructed." This is further explained, verses 16–17: "I did not immediately (after his conversion) confer with flesh and blood, nor did I go to Jerusalem to those that were apostles before me." He saw Cephas and James, the brother of the Lord, for the first time three years after his conversion and then only for two weeks and did not meet them again till fourteen years later. As there exists not the least reason why Saint Paul's statements in this case should not be absolutely true, we have to acknowledge that he was ordained, or consecrated, neither by the original apostles nor by other persons. In this respect the election of Matthias furnishes a parallel. For it is quite evident that Matthias was as little ordained as Saint Paul. Acts i. 26 simply says: "The lot fell upon Matthias, and he was numbered with the eleven apostles." Consequently, Saint Paul not only did not belong to the Twelve, but also did not become their successor. He occupies, as to them, an exceptiona and extraordinary position, at least from the point of view of the Catholic doctrine of Apostolic Succession.

That will become finally confirmed when we shall succeed in determining the exact time at which Saint Paul's apostleship commenced. The relative clause in the already quoted phrase, Gal. i. 1, "an apostle . . . by Jesus Christ and God the Father who

raised him from the dead," places that date somewhere after Christ's resurrection. As Jesus Christ is described there as the direct agent, it is only natural to assume that on that occasion he appeared to Saint Paul in person. Such an event required as a matter of course the active co-operation of God the Father. The heavenly Jesus, in constant communion with the Father, could not think of returning to the earth, unless God authorised him to do so. In this sense Saint Paul was certainly entitled to call himself an apostle both by Jesus Christ and by God the Father. 1 Cor. ix. 1 seems likewise to support this view, namely, that Jesus Christ in person invited Saint Paul to become his apostle. The two questions which there follow one another immediately: "Am I not an apostle? Have I not seen our Lord Jesus?" hardly admit of any other explanation than that the writer of those words intended to say that he had become an apostle when he saw the Lord. The same Epistle in which these two questions occur knows of but one vision of Christ which Saint Paul had; and that was, according to Saint Paul's testimony, the last appearance of the risen Christ up to the time when First Corinthians was written. We must, therefore, conclude that 1 Cor. xv. 8 refers to the same event which we find described at greater length in Acts ix. 1 ff., xxii. 3 ff., and xxvi. 12 ff., and which is commonly called St. Paul's conversion. From the passages thus far examined, it seems to be quite clear that his apostolate began directly after his conversion, or that his conversion and his apostolic call are identical or at least coincident.

That is made still more apparent by Gal. i. 15 ff. According to that passage, the revelation of Christ in Saint Paul served the purpose of making him preach the gospel among the Gentiles; and this revelation took place three years before his first and seventeen years before his second trip to Jerusalem, that is to say, at the very threshold of his Christian life. During all these seventeen years he was busily engaged in propagating belief in Jesus Christ. That is directly stated in Gal. i. 22 f.: "I was unknown by face to the Christian congregations of Judæa. Only they were hearing that he who once persecuted us now preaches the faith whom he once destroyed." Since he preached in different countries and cities—

Arabia, Syria, Cilicia, and Damascus are mentioned—he was not a settled but an itinerant preacher, not a prophet, but an apostle. He himself describes (Gal. ii. 2) this activity in the interest of Christ's Gospel as "running."

If more proof should be required, it is furnished in Gal. ii. 7–9 by the thrice-repeated statement that Saint Paul was an apostle and was recognised as such by James, Cephas and John, even before the ceremony at Antioch of Acts xiii. 1–3 occurred. The words in question are: (1) "When they saw that I was entrusted with the gospel of the foreskin as Peter with that of the circumcision;" (2) "He that was effective in Peter to the apostolate of the Circumcision was effective also in me to the Gentiles;" (3) "Knowing the grace which was given me, James, Cephas, and John, who were regarded as pillars, gave me and Barnabas the right hands of fellowship that we to the Gentiles, they however to the Foreskin."

The information furnished by the Acts concerning the life of Saint Paul between his conversion and his first journey to Asia Minor, is extremely meagre and unsatisfactory. But, in the main, it corroborates the testimony of the Epistle to the Galatians. For we learn from the Acts that Saint Paul became at once engaged in preaching the gospel in different localities. Damascus, Tarsus, and Antioch, the latter two cities being the capitals of Cilicia and Syria respectively, are especially named. The only serious differences are, first, that the apostle's sojourn in Arabia is not mentioned in the Acts, and second, that his first visit at Jerusalem is represented in another light than in Gal. i. 18. But that may be accounted for on the following supposition. The author of Saint Paul's life in the Acts was apparently not acquainted with the details of his earlier life and his work in the East. That the apostle is called, Acts xiii. 1, a prophet, is therefore of little significance, except as indicating perhaps that, towards the end of the first period of his apostolic activity, he may have had a kind of permanent home at Antioch. That again would go far to prove that the only distinction between a prophet and an apostle in the Apostolic Church was that the former was a settled, the latter an itinerant, preacher. The laying on of hands, Acts xiii. 3, cannot under these

circumstances be more than simply a farewell blessing; and the revelation, mentioned Acts xiii. 2, must have been to the effect, not that Saint Paul was henceforth to be an apostle, but that he and Barnabas should seek new mission-fields in the West.

But it will be maintained that St. Paul was not in need of anything like an ordination, or consecration, because he was appointed directly by Jesus Christ himself. People who hold this view will indeed accept the definition of an apostle's being an itinerant preacher, but will add the modification that an apostle must have been called by Jesus Christ in person. In order to be enabled to form an accurate conception as to this point, we have to investigate the real character of the revelation on the strength of which Saint Paul claimed to be an apostle.

The Acts furnish us not less than three different accounts of it, namely, Acts ix. 1 ff., xxii. 3 ff., and xxvi. 12 ff. The latter two passages apparently hand down narratives in which the apostle himself relates his conversion. But it is hardly necessary to call attention to the fact established long ago that St. Paul's addresses, as found in the Acts, do not contain his original words. There is a possibility that persons who were present when they were delivered and remembered them more or less exactly put them down in writing. But it is more probable that the historian, not possessing such copies of the original speeches, composed them in accordance with what, to the best of his knowledge and belief, the apostle might have spoken. Neither Acts xxii. 3 ff. nor xxvi. 12 ff. can therefore be considered as conveying historical information as to the details of Saint Paul's conversion at first hand. Moreover, having in mind the probable origin of these orations, we cannot be very much surprised when we shall perceive that they differ to a considerable degree from one another as well as from the statements in the Epistle to the Galatians.

According to Acts ix. 1–19, neither Christ nor Ananias informed Saint Paul directly that he was henceforth to be an apostle. The words used by Jesus are: "Saul, Saul, why do you persecute me?" and "I am Jesus whom you persecute. But arise and go into the city, and it shall be told you what you must do." Ananias says to

him: "Brother Saul, the Lord has sent me, Jesus who appeared to you on the way where you came, that you may see again and be filled with the Holy Ghost."

In the second account, Ananias charges Saint Paul expressly to become a witness of what he had seen, and, after the apostle's return to Jerusalem, that general command is specified so as to mean that thereafter he was to confine his work to the Gentiles. Acts xxii. 14 f. Ananias tells Saint Paul: "The God of our fathers has selected you to know his will, and to see the just one, and to hear the voice of his mouth that you shall be his witness to all men of what you have seen and heard." Verses 17 ff. then go on to relate: "But when I had returned to Jerusalem and was praying in the temple, I happened to be in a trance, and I saw him saying to me; Hasten and go quickly out of Jerusalem, because they will not accept your testimony of me . . . I shall send you far to Gentiles."

In the third account, Ananias of Damascus is not mentioned at all. But it is Jesus himself who informs Saint Paul: "I am Jesus whom you persecute. But arise and stand on your feet. For to this end I appeared to you, to select you as servant and witness of what you have seen and what I shall show you, and I deliver you from the People and from the Gentiles, to whom I send you to open their eyes in order that they may turn from darkness to light and from the power of Satan to God, that they may receive forgiveness of sins and a lot among the sanctified through faith in me." Acts xxvi. 15–18.

Of these three versions the first two are contradicted not only by the third, but also by Gal. i. 1 ff., inasmuch as Ananias is made by them the mediator between Jesus Christ and Saint Paul. For, although that is not stated directly in the first account of the apostle's conversion, it follows from the fact that Ananias learns in a vision, before he had seen the new convert, that he had been chosen as an instrument to carry the name of Jesus to Gentiles and kings and sons of Israel. We have, therefore, to assume that he communicated this vision to Saint Paul. That does, however, not imply that Acts xxvi. 12 ff. is an absolutely authentic account of the

apostle's conversion. For the statement of verse 20: "I announced first to them at Damascus and Jerusalem and the whole land of Judæa and the Gentiles to repent and turn to God" is contradicted by Gal. i. 22 ff., as far as the preaching in Judæa is concerned. But no matter how far Acts xxvi. 12 ff. is to be considered as historical, it agrees with Gal. i. 1 ff. in so far as a human agency is excluded with regard to Saint Paul's apostleship.

The next question to be settled is how Jesus called Saint Paul to become his apostle. The Twelve were invited by Jesus to follow him, in order to be made fishers of men; while other people were present and saw and heard what was happening. Their apostolate was, consequently, an objective fact. No room was left for doubting that they had actually been called by Jesus Christ himself. Acts ix. 7 seems to support the view that Saint Paul became an apostle in a similar way. The passage reads: "The men who were travelling with him stood amazed. For they heard the voice, but beheld no one." The supposition of course is that Jesus on that occasion uttered virtually the words we find Acts xxvi. 15 ff. But, Acts xxii. 9 states: "Those that were with me beheld the light, but did not hear the voice of him who spoke to me." The third account seems to concur in this respect with Acts xxii. For in Acts xxvi. 13 f. it is said: "A light from heaven surpassing the brightness of the sun shone around me and those that travelled with me; and when we all had fallen to the earth, I heard a voice saying to me." The force which threw them all to the ground can only have been the light, which, therefore, must have become visible to all. On the other side, the change of the subject in the last two clauses from "we" to "I" apparently indicates that the words were heard by Saint Paul alone.

Hence, according to two of the three accounts of the Acts, Saint Paul's apostolic call was not an objective, but a subjective, event which took place in his inner life and consciousness rather than in the outer world. For, although other persons were within hearing distance and were aware of something extraordinary going on, the voice of Jesus did not become audible to them. Such a conception of the origin of Saint Paul's apostolate coincides with

what the apostle himself states, Gal. i. 16. where we read that God revealed his son *in* him that he should preach him among the Gentiles. It is further supported by the well-attested fact that Saint Paul's apostleship was most strenuously denied by certain Christians who stood in close relationship to the original apostles. If there had been any witnesses of Saint Paul's appointment as apostle of the Gentiles by Christ, he would certainly have referred to them in order to overcome his opponents. But as it was, he could only appeal to his apostolic labors. For thus we read in 1 Cor. ix. 1 f.: "Are you not my work in the Lord? If I am not an apostle to others, I am however at least to you. For you are the seal of my apostleship in the Lord!"

Saint Paul nowhere alludes to Jesus Christ's having spoken to him. Even in 1 Cor. ix. 1 he only mentions that he has seen him, although his contention of being Christ's apostle as truly as any of the original apostles would have been greatly strengthened if he had been able to quote the words of Jesus with which he had been installed in his high office. The passage referred to is the well-known question: "Am I not an apostle? Have I not seen our Lord Jesus?" That is rather curious and renders it not improbable that Jesus did not talk to Saint Paul when he appeared to him. The testimony of the Acts to the contrary can certainly not be considered as very convincing in the face of the absolute silence of the Pauline Epistles.

This, however, is only of secondary importance. The main thing is to understand why Saint Paul had to regard even the mere appearance of Jesus Christ as a call to enter his service in the capacity of an apostle. Saint Paul, as we learn from Gal. i. 14, Phil. iii. 5 f., Acts xxii. 3 ff., etc., was a zealous Pharisee, a Jewish divinity student, before he came to believe in Jesus Christ. As disciple of Gamaliel he must have been aware of being destined for the office of a teacher of religion. That very knowledge made him at first a persecutor of the Christians. He felt from his Jewish standpoint obliged to be a defender of God's religion, and recognised in the disciples of Jesus dangerous foes of the true faith. The vision of Jesus proved to him that he had been mistaken. But it also

demonstrated that God and Jesus Christ were taking quite an uncommon interest in him. Otherwise, they would have ignored his wicked efforts, just as they proved indifferent to the pernicious activity of the other persecutors of the Christians. This again implied that he was expected to perform a more than ordinary task, which, however, could only consist, in view of Saint Paul's previous training, in preaching and propagating the same faith he had at first destroyed. Just as he had not been content with harassing the adherents of Jesus where he lived, but had gone after them to Damascus and would have followed them elsewhere, he now became conscious of being under the strongest possible obligation of proclaiming what he had seen, at the greatest number of different places. The intensity of his desire to serve Jesus Christ corresponded exactly to the fanatic zeal he had displayed in the interest of his old religious belief. That was the natural and obvious train of thought which was aroused in the apostle's mind by the vision of the risen Christ. It may be that he either believed he heard or actually did hear such words as we find in Acts xxvi. 14 ff. But even if that was not the case, he could not have failed to arrive at the same conclusion for himself.

To many Christians such an explanation will seem to rob the apostolic office, the highest office which the Church has ever known, of its supernatural character. For Saint Paul evidently learned that he had been chosen to represent Jesus Christ as apostle in a manner very similar, if not entirely identical, to that in which every true minister of to-day must become assured of being called not by men only, but first of all by Jesus Christ. We are too prone to read the past in the light of the present time. Because we are sure that we should overwhelm the first apostles with honors, if they should enter into our midst, we presume that the attitude of the first Christians and even of non-Christian people towards them has been essentially the same, and that this mental attitude found expression in stately ceremonies. We overlook the fact that the real halo of the apostle's office consisted in the dangers, hardships, and persecutions which they had to undergo, not only on the part of the heathen and Jews, but also on the part of other Christians. The

harvest was enormously great, and laborers were exceedingly scarce. The first Christians, therefore, could not insist on any ceremonies, but any one who was able to do the work of an apostle could at any time he wished enter upon the career of an apostle. That means exactly what has been stated several times before, that the apostles of the early Church were itinerant preachers, and that all itinerant preachers were apostles.

It has, accordingly, to be demonstrated that even in the New Testament the title is actually applied to other itinerant preachers besides the Twelve and Saint Paul. That is indeed easy enough. Barnabas, for instance, in Acts xiv. 14 is called an apostle. The words in question are: "The apostles Barnabas and Paul," where as in Acts xiii. 1–3, Barnabas is named even before Paul. That Barnabas was generally recognised as an apostle of Christ is further confirmed, Gal. ii. 9, where the representatives of the original apostles gave the right hands of fellowship not only to Saint Paul, but also to Barnabas, and, consequently, acknowledged in a formal manner that they both were apostles of the Gentiles. Moreover, 1 Cor. ix. 6, Barnabas is named by Saint Paul himself in such a way as to imply that he was an apostle as well as Saint Paul the apostle. Barnabas is Joseph Barnabas, a Levite of Cyprus, mentioned in Acts iv. 36, and is possibly identical with Joseph Barsabbas of Acts i. 23. The latter was one of the two men whose names were proposed as candidates for the office which had been deserted by the traitor. According to Acts ix. 27 and xi. 25, it was Barnabas who acted as Saint Paul's sponsor, or who, to use a modern phrase, discovered him. Whether that is correct is, however, doubted by some, because it is difficult to harmonise it with the above discussed statements of the Epistle to the Galatians. But it nowhere appears that Barnabas was invested by the Twelve with anything like apostolic authority, previous to Gal. ii. 9, although he may have come very near to being numbered with them. All we learn is that he was a very generous man and possessed the gift of preaching, although not to such a degree as Saint Paul. He became an apostle because as a preacher of the gospel he was not satisfied with staying permanently at Antioch, but like Paul pre-

ferred to lead a wandering life and for quite a time did so in company with Saint Paul.

Rom. xvi. 7, two other apostles, Andronicus and Junias, are named. The verse reads: "Salute Andronicus and Junias, my kinsmen and fellow-prisoners, who are notable among the apostles, who also were in Christ before me." The phrase "who are notable among the apostles" indicates that there must have been quite a number of apostles, besides the Twelve, Saint Paul, Barnabas, and these two otherwise entirely unknown men. Gal. i. 19, James the Lord's brother is mentioned as one of the apostles, although his name does not occur as one of the Twelve. According to 1 Cor. ix. 5, several of the brothers of the Lord must have been engaged in apostolic labors. 1 Thess. ii. 6, the writers of that epistle call themselves apostles. Cap. i. 1, Paul, Silvanus, and Timothy are enumerated as the joint authors. The conclusion is that Silvanus and Timothy were also apostles. The plural in the first passage does certainly not refer to Saint Paul alone. For shortly afterwards, 1 Thess. ii. 18, it reads: "We wished to come to you, I Paul even both once and twice." Lightfoot refers also to 1 Cor. xv. 6–8, as rendering it probable that, even before Saint Paul's conversion, the Christian Church possessed more than twelve apostles. For in those verses a distinction is made between the Twelve and all the apostles. The words in question are: "He appeared to Cephas, then to the *Twelve*, then he appeared to more than five hundred brethren at once . . ., then he appeared to James, then to *all apostles;* last of all he appeared also to me."

That the door to the apostolate stood wide open to all who had the intellectual qualities of an apostle is finally emphasised by the phenomenon of false apostles even in the New Testament Age. Lightfoot remarks with regard to them:

"It may be added that only by such an extension of the office could any footing be found for the pretensions of the false apostles, 2 Cor. xi. 5, 13, Rev. ii. 2. Had the number been definitely restricted, the claim of these interlopers would have been self-condemned."

Paul writes in 2 Cor. xi. 13:

"Such are false apostles, deceitful workers, transforming themselves into apostles of Christ."

And in Rev. ii. 2 we read:

"Thou hast tried those who say they are apostles and are not, and found them liars."

The inference is that there must have been a rather great number of false apostles, which in turn implies that also the true apostles were numerous. Moreover, the very existence of false apostles proves definitely that there was in the Apostolic Church no board of Church-officials by whom men were licensed to travel as apostles. For such a board would, in the first place, have been very careful in selecting proper candidates, and would, in the second place, have promptly revoked such a license if an apostle should have afterwards become unworthy of his high calling. False apostles in the Apostolic Church can only be explained on the supposition that any one could become an apostle if he saw fit to do so, without asking for anybody's consent or approval.

These conditions still prevailed at the time when the *Didache* was written. Chapters XI and XIII of that book treat of apostles, prophets, and teachers. The first paragraph lays down the general principle as to the attitude of the congregration with regard to those men:

"Whosoever shall come and teach you all these things aforesaid, receive him. But when he that teaches turns about and teaches another doctrine so as to destroy, do not listen to him; but if he shall teach so as to increase righteousness and knowledge of the Lord, receive him as the Lord."

Then follow, in Chap. XI, special instructions concerning the reception and treatment of apostles and prophets and Chap. XIII of prophets and teachers.

In these chapters it is clearly seen that, at the time when the *Teaching* of the Twelve Apostles was written, the apostles were still itinerant preachers, and even more so than in the Apostolic Age, for they were not permitted to stay longer at the same place than two days at the utmost. The prophets, on the other hand, were settled preachers. The apostolate as well as the office of prophet

and teacher could still be entered into without any formality. The congregations were indeed entitled and obliged to judge all that pretended to be apostles and prophets. But they were judged not on the strength of credentials they might have been able to offer, but on the strength of their teaching and conduct; and everybody, without exception, who was found teaching the same doctrine that was contained in the *Teaching* of the Twelve Apostles was to be received "as the Lord."

The importance of this testimony, in confirmation of what we have learned from the New Testament, is very great and has to be considered the greater the younger the *Didache* shall prove to be. At present, the authorities are inclined to make it a rather late writing. Harnack, for instance, attempts to show that the book was composed somewhere between 135 and 165 A. D. While I personally am of the opinion that the *Didache* belongs to the Christian literature of the first century, and that just on account of such precepts as those concerning apostles, prophets, and teachers, I am well pleased with accepting the year 150 as the date of its birth. That would definitely prove that for over one hundred years the apostolate and the episcopate were two entirely different offices, which existed side by side and had each its separate task. The force of this conclusion would in no wise be weakened, if we had to admit that the Didache belongs to the first century of the Christian era. For the apostles of this book are certainly not the apostles of the New Testament, but successors of them.

The doctrine of Apostolic Succession is accordingly not supported by our sources of the history of the Apostolic Age. It has to be considered rather as a later attempt to explain the fact that the episcopate gradually superseded and assumed the functions of the apostolic and prophetic offices in addition to its own prerogatives. If there ever was anything like Apostolic Succession, in the sense that the first apostles appointed those who were to succeed to their office and authority, the successors of the first apostles must be recognised, not in the bishops of the first generation of Christians, but in the apostles of the second generation, etc.

But the result of this investigation is still more decisive. For

it is evident that even in the line of apostles there existed nothing like Apostolic Succession in the Catholic meaning of that term. The first apostles did not appoint those that were with them and after them to do apostolic work. The only rule was the inner calling. Whosoever gained in any way the conviction that God and Jesus Christ desired him to be an apostle, could go forth preaching the gospel and assuming the title of apostle. The Christian congregations were obliged to respect such self-appointed apostles, provided their teaching was not destructive of what, according to the *Didache*, the Twelve Apostles had taught, and their behavior not opposed to the rules of apostolic conduct as stated in that book. On these conditions, any itinerant preacher was entitled to exercise the authority of an apostle and demand the same honor as would have been accorded to the Lord himself.

But it must be asked why the apostolate disappeared, apparently all at once, without leaving the slightest trace of its existence beyond the age of the New Testament and the time to which we are referred by the *Didache*. The date at which it has become extinct is entirely unknown. That much, however, is sure, it cannot have continued to exist very long after the first appearance of the *Teaching* of the Twelve Apostles. For in that case Christian apostles would be mentioned in later writings, and the more so, if the *Didache* was compiled after the middle of the second century. In order to discover the original cause which produced an evidently sudden and universal abolition, or discontinuance, of the apostolate, till it was revived by the Protestant Evangelist of the nineteenth century, we must return to the Apostolic Age and the apostle Paul, who in all probability has to be held responsible for having undermined his own office.

Saint Paul preached the gospel without accepting any material compensation. That is a well-established fact, mentioned in quite a number of passages both in the Acts and in his own Epistles. Acts xx. 33–34, in the course of his farewell-address to the elders of Ephesus, he is made to say:

"I have coveted no man's silver or gold or apparel. You yourselves know

that these my hands have ministered unto my necessities and to them that were with me."

He further writes:

"I have preached to you the gospel of God gratuitously." (2 Cor. xi. 7.)

"You remember, brethren, our labor and travail. For working night and day in order not to become a burden to any of you, we preached unto you the Gospel of God." (1 Thess. ii. 9.)

"We did not eat any man's bread for nought, but wrought with labor and travail night and day that we might not be chargeable to any of you." (2 Thess. iii. 8.)

"Have we not power to eat and drink? Have we not power to take along a sister as wife? Even as the other apostles and the brothers of the Lord and Cephas? Or have only I and Barnabas not power to abstain from working?" (1 Cor. ix. 4–6.)

Only on rare occasions the apostle seems to have accepted gifts from Christian friends.

In order to follow his apostolic mission in such a way, Saint Paul had both to remain single and to engage in manual labor wherewith to earn a living. He did that in his capacity as a tent-maker. As such he worked, for instance, at Corinth with Aquila and Priscilla, as is related Acts xviii. 1–3. The passages quoted above, however, indicate at the same time quite distinctly that not Saint Paul alone worked at a trade, while doing missionary work, but that his companions and colleagues followed his example. Of Barnabas, this is stated in the above-cited passage. Besides, the first person plural in the two passages from the Epistles to the Thessalonians renders it highly probable that Silvanus and Timothy did the same. We have therefore to assume that the Gentile Christians came to consider such a mode of existence as becoming a true apostle.

The original apostles and the apostles among the Jews in general did not conform with Saint Paul in this respect. They were, as far as we are able to judge, without exception, married, took their families with them on their missionary expeditions, and supported themselves as well as their families by what they received in return for their missionary work from those among whom and for whose benefit they labored. Their energies and abilities were

all concentrated upon preaching the gospel. This is stated quite plainly and unmistakably in 1 Cor. ix. 4–6, which has been given above in full. The questions asked by Saint Paul undoubtedly imply that the other apostles and the brothers of the Lord and Cephas ate and drank at the expense of their converts, that they travelled accompanied by their wives, and that they forbore doing manual labor.

This difference led to important results. Saint Paul had indeed from the very beginning chosen the wider field, inasmuch as he did not confine himself to his own countrymen. This advantage over the original apostles, however, was immensely increased by his serving as apostle gratuitously. It is of course much easier to convince and convert people when the preacher does not make any demands upon their purses, but asks alone for their mental assent to the new doctrine, than when one has to rely from the very first moment on the willingness of his would-be disciples to make sacrifices for the support of the teacher. The combination of these two factors explains why Saint Paul was so infinitely more successful in spreading belief in Jesus Christ than the original apostles, so that he was in a position to boast: "I have labored more abundantly than they all."

But why did the Twelve not adopt the same method? They had in their youth all become inured to some kind of manual labor and might even as fishermen have found remunerative occupation as easily as Saint Paul in numerous cities along the shores of the Mediterranean Sea. The simple answer is that they refrained from imitating Saint Paul because the great apostle of the Gentiles was wrong in that respect, and because they felt in conscience bound to obey an implicit command of their Lord. Saint Paul himself has proved convincingly, 1 Cor. ix. 7–14, that the way of the Twelve was right. It was right, in the first place, on the ground of common sense. The apostle proposes the question:

"Who ever serves as soldier at his own expense? Who plants a vineyard and does not eat of its fruit? Who tends a flock and does not eat of the milk of the flock?"

He further quotes, in support of the position taken by the Twelve and their co-workers, the Old Testament precept:

"Thou shalt not muzzle the threshing ox."

Therein he finds, in accordance with the allegorical method of Scripture explanation in vogue among his Jewish teachers, a direct reference to the apostles of Jesus Christ. He asserts that it is only just and proper on the part of those to whom the gospel is preached to show their gratitude and recognition by offering material gifts in return for the spiritual gifts which they receive. He also calls attention to the universal custom that priests were entitled to a portion of all the sacrifices presented at their shrine. But, what is by far the most important argument, he states that the apostles of the Jews were obeying a commandment of Jesus Christ in relying for their support on those to whom they preached. For verse 14 we read:

"The Lord commanded those that preach the gospel to live of the gospel."

The commandment of the Lord to which Saint Paul refers is preserved, Matt. x. 9–10:

"Provide neither gold nor silver nor brass in your purses nor a scrip for your journey neither two coats nor sandals nor a staff. For the laborer is worthy of his food."

These words are sometimes misinterpreted. They are immediately preceded by the other precept: "Gratuitously you received, gratuitously give." It is, therefore, imagined that the objects of the two verbs "receive" and "give" is the gospel. But there is not the least reason to be discovered why in this case the general rule should not be applied, namely, that a word or idea left to be understood has to be implied from what directly goes before. The immediately preceding sentences are:

"Heal such as are sick, cleanse lepers, raise dead persons, cast out devils."

Accordingly, that which the disciples had received and were to give gratuitously was the art and power of healing diseases. Such a commandment must indeed be considered as very proper and even necessary. For that power might have tempted them to

neglect their apostolic work and turn to acquiring material wealth. People have always proved willing to pay any price for having their health restored. As far as the apostles were physicians they had to work gratuitously, but as far as they preached the gospel they were laborers worthy of their food, which, as a matter of course, comprised all the necessities of life.

Saint Paul, on the other hand, did not conform to the commandment of Jesus Christ and of common sense, but followed rather the example of his old teachers, the Scribes, or Rabbis. For the fact that he was a tent-maker must not lead us to the conclusion that he became the greatest apostle of Christ in spite of being simply a journeyman. The Apostle was in the first place a scholar, and it was in his capacity of divinity student that he also made tents. It was a universally recognised rule among the Scribes, not to accept remuneration for their teaching, but to make a living in some other way. Talmud and Midrash, the old Jewish commentaries of the Pentateuch, contain a number of sentiments to that effect. There occur, for instance, such passages as:

"Wisdom forsakes him to whom it serves as a means of making money.

"Scholarship which is not united with manual labor does not last and leads to sin.

"Pay attention, besides to theology which you love, also to a trade."

Wünsche, a scholar who has contributed explanations of passages in the first three Gospels from Talmud and Midrash, and from whose book the just cited maxims have been borrowed, says in addition:

"The renowned teachers of the Law, in order to gain a livelihood, followed either a trade or were engaged in agriculture or commerce or even did the work of a common day-laborer."

In imitating the example of the Scribes rather than the precedent set by Jesus himself and his original apostles, Saint Paul was controlled by motives which, notwithstanding all respect due to the great apostle, are not entirely creditable to him as Christian. For he himself tells us that he was guided therein by personal ambition. He wished to perform an *opus supererogatum*, to have

something to boast of as against the original apostles. His words to this effect are found 1 Cor. ix. 15–18 and cannot be misunderstood.

"It would be better for me to die than that anybody should make my glorying void. For when I preach the Gospel, I have no matter for glorying. For a compulsion lies upon me. For woe is unto me, if I should not preach the Gospel. For when I do this as a volunteer, I have a reward, but when not as a volunteer, I am entrusted with a stewardship. What is now my reward? That in preaching the Gospel I render the Gospel free of charge so as not to use my power in the Gospel."

However mildly we may be inclined to state the case, we cannot exonerate Saint Paul from the odium of having in this question been impelled by a not Christlike desire of proving himself to be a greater apostle than the personal disciples of Jesus, "the more than apostles," as he calls them, not without some bitterness, 2 Cor. xi. 5.

There is still another consideration which made Saint Paul anxious not to become dependent upon his congregations, but to remain "free from all men." He explains this in 2 Cor. xi. 8 ff., where he first states that he did not accept any compensation for his apostolic work in Achaia. The reason was not that he loved the Christians of that province less than the brethren of Macedonia, but, as he says, verse 12:

"I do this and shall do this, in order to cut off the base of supplies from those who want a base, that wherein they boast they may be found even as we."

He then proceeds to stigmatise his opponents as false apostles, deceitful workers, etc. His intention in preaching the gospel, without living of the gospel, was, consequently, to render it impossible for promoters of Judaistic tendencies to work where he had preached. For, in view of Saint Paul's apparently absolute unselfishness, they, having been taught to expect a decent living in return for their apostolic labors, could not fail to appear in the eyes of Saint Paul's disciples as greedy and covetous persons, not deserving the name of apostles. The apostle of the Gentiles did not apply this test openly and directly to the original apostles, but he came very near doing so, and must undoubtedly have rendered it

very unpleasant for them to call on congregations which he had founded, and where his type of an apostle was recognised as the only true one. The companions and followers of the Twelve were entirely barred from access to Pauline, that is, to Gentile, Christian congregations, and that again came very soon to mean, from access to Christian congregations outside of Palestine in general.

That those men did not give up the fight without a struggle, but in turn attacked Saint Paul even more vehemently than ever before, questioning his apostolic title as well as the soundness of his doctrine, is quite clear and abundantly attested by Saint Paul's own Epistles. The apostle of the Gentiles, however, carried the day. The question of the propriety of receiving pay for apostolic work was of course only a side-issue in that struggle between Saint Paul and his Judaistic opponents. For, as we have seen, he himself admits expressly the justice of their claims in this respect. But the self-supporting method of Saint Paul and his followers proved a very effective means of overcoming their adversaries who were bent on establishing the authority of the Jewish Law in all Christian congregations. In that war Saint Paul undoubtedly represented the greater truth. But inasmuch as the end does not justify the means, it must be doubted whether Saint Paul acted wisely in compelling himself and others either to live as he did or to cease performing the work of apostles.

That Saint Paul's example prevailed, although with a slight modification, appears clearly from the precepts of the *Didache* concerning the support of apostles and prophets. Chap. xi. we read:

"Every apostle who comes to you shall be received as the Lord. But he shall not stay longer than one day If it however be necessary, he may stay also the second day. But if he remains three days, he is a false apostle. But when the apostle departs he shall accept nothing except bread till when he reaches his night-quarters. But if he asks for money he is a false prophet."

The apostles of the *Didache* are evidently celibates. That is indeed not expressly stated, very likely, because it was at that time unnecessary to do so, as everybody took it for granted that an apostle could not be married. Still, the precepts given are of such

a character, as to leave no room for doubt on this point. They are absolutely silent as to wives of apostles. Besides, a man who was not allowed to stay longer at one place than two days at the utmost and who had to be contented with an existence allowing him only the barest necessities could not think of taking with him a sister as wife, not to speak of his children. Travelling in those times was as a matter of fact connected with greater hardships than to-day. If we, accordingly, have to admit that the apostles of the *Didache* must have been unmarried men, we have to recognise in them not successors of the Twelve who were married, but successors of Saint Paul and Barnabas who were unmarried.

There is, indeed, a difference between the apostles of the *Didache* and Saint Paul. The latter supported himself with his own hands, whereas the former had their wants supplied by the congregations to which they came in the course of their wanderings. In this respect they might rather seem to be successors of the Twelve. But the proper explanation of this circumstance is to be found in the following consideration. The way of Saint Paul was specifically Jewish and is hardly met with in any other nation. It was certainly utterly foreign to Greek and Roman customs and ideas. Among the Greeks and Romans, teaching was a highly honored profession, and all free teachers were paid for their services. Therefore, if among the Christians in the Roman Empire the type of apostleship, represented by the original apostles, had been regarded as the true apostolic type, the later apostles would have become comparatively well-paid men. But as not the method of the original apostles, but that of Saint Paul served as standard, the actual condition in which we behold the apostles of the *Didache* has to be considered as a compromise between Greek ideas and customs on the one hand, and the influence of Saint Paul's example on the other. The Greeks and Romans did not believe it proper and advisable for teachers to engage in manual labor. They regarded teaching in itself as well as the preparation it requires as sufficient work for one man and were more than willing to support efficient teachers. But they also knew that Saint Paul had insisted on not accepting pay of any kind from his disciples. The result of

these antagonistic influences was the rule that apostles were under no condition to receive pecuniary compensation, but that they were only entitled to enjoying the hospitality of a congregation for two successive days.

It is sometimes said that the early Christians were compelled to take such radical measures in order to get rid of false apostles. If that were really the case, they have indeed succeeded in rendering it impossible for hirelings to play the part of an apostle. But they achieved this only by excluding at the same time all true disciples of Christ from that important office. No self-respecting man could, for any length of time, submit to being driven from place to place like a fugitive and vagabond. There were many Christians in that age who imagined the state of celibacy to be superior to that of marriage, from a religious point of view, and who viewed asceticism as the perfection of Christ's morality. But even such people preferred to seek a place of refuge in a desert, instead of subjecting themselves to the incessant criticism of their character and motives by strangers. Moreover, those radical measures, if designed to prevent the rise of heresies, have proved absolutely ineffectual. For it is a well-known fact that the history of the Christian Church during its first centuries is to a very great extent a history of false doctrines, which are usually summed up under the common name of gnosticism. Nowadays the danger of hirelings entering the service of the Church is certainly greater than ever. For ministers of the gospel are highly respected in society and receive in many cases large salaries. But the idea of decreeing that no preacher should henceforth be paid for his services, so as to offer no attractions to those whose only object in life is material wealth, would justly be regarded as ridiculous.

That the early Christians thought in this respect just as we think, is directly confirmed by Chap. XIII. of the *Didache*. It reads:

"Each true prophet who desires to settle among you is worthy of his food All the firstlings now of the products of the wine-press and threshing-floor, of oxen and small cattle thou shalt take and give to the prophets. For they are your high priests. . . . When you bake bread, take the first and give according to the com-

mandment. Likewise when you open a jar of wine or of oil, give the first part to the prophets. Of money, however, and of clothing and of all kind of property take the first part, as much as appears proper to you, and give according to the commandment."

These words clearly show that the tendency of the early Greek and Roman Church has been properly defined above. The commandment which Jesus Christ had given for the benefit of his apostles was known and obeyed in its widest sense. The food of which the laborer is worthy comprises everything, as new wine, grain, calves, bread, wine, oil, money, clothing, and all other things. But the men who received all that are not the apostles, but the prophets, not the itinerant, but the settled preachers. Surely such an arrangement could not have for its end the suppression of false apostles. For nothing prevented them from becoming prophets, instead of apostles. The example of Peregrinus Proteus, in Lucian's satire on the *Death of Peregrinus*, clearly establishes that fact. The hero of that story became a Christian prophet (§ 11) and as such acquired in a short time great riches (§ 13). Yet he certainly was an unmitigated fraud and hireling. The absolutely illogical and irrational arrangement as far as the apostles are concerned, can therefore only be accounted for on the supposition that Saint Paul's example and not that of the original apostles was accepted as obligatory by the Gentile Christians. The great apostle of the Gentiles is, therefore, to be held responsible for having undermined and destroyed the apostolate of the Christian Church.

It is not our task to define what blame is to be ascribed to Saint Paul in this matter. We started with the intention of discovering the relation in which he stands to the Apostolic Succession. It has, as I hope, been demonstrated that the present Church, as the Church of the Gentiles, was not founded by the Twelve Apostles, but by Saint Paul and his companions. If, therefore, the first bishops and deacons of our churches were really ordained by an apostle, that apostle did not belong to the circle of the Twelve, but was either Saint Paul or one of the numerous other Gentile apostles. Accordingly, we do not possess the least right to call them successors of the Twelve, because neither Saint Paul

nor his assistants were successors of the Twelve. But even if it could be proved that the first Gentile bishops and deacons were ordained by the Twelve, that act would in no way make them successors of the Twelve. For the apostles both of the Foreskin and of the Circumcision were succeeded by other apostles and would have been succeeded by such up to the present time, if Saint Paul had not rendered that impossible by compelling his successors to serve without recompense.

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THE PERSONIFYING PASSION IN YOUTH WITH REMARKS UPON THE SEX AND GENDER PROBLEM.

THOSE who like to find in the evolution of the individual the reappearance of the stages through which the race has passed, will be disposed to look upon the remarkable tendency to personify recorded in the following pages as indicating an unusually well marked and protracted animistic stage.

Considered from the standpoint of philology, the following record will suggest the gender and sex problem.[1] Philologists have not yet come to an agreement as to the origin of the puzzling use made of gender in the naming of inanimate objects. Why, for instance, does the French say *la* porte, *la* lune, *la* beauté and *le* livre, *le* soleil, *le* retour? The plausible theory of Herder, Adelung, and Grimm—until recently without rival, but now attacked by several, Brugmann of Leipzig in particular—holds that gender in language reflects simply the tendency of the early man to personify and sexualise lifeless objects. Those giving the impression of the characteristics associated more particularly with the male sex were looked upon as masculine and designated accordingly. This theory has recently received the support of Gustav Roethe (1890).[2]

Many of the psychological arguments brought to bear upon the Adeling-Grimm theory by Brugmann and others lack foundation. Brugmann asserts for instance that "Grimm's theory ascribes to the Indo-Europeans a mental condition which we cannot harmonise

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[1] My attention was drawn to this point by the editor of this review.

[2] See the Preface to the third vol. of the third edition of Grimm's Grammar.

with what we actually know of the mental life of man and of the races" . . . "for primitive man the external world was mostly matter, material, just as it is for us to-day, but to him even more so perhaps than to us." . . . . "Why should one think that primitive man overloaded language with personal metaphors instead of impersonal?"[1] This is a statement which goes directly against the teachings of modern Anthropological and Child psychology. Grimm's explanation need not be interpreted as meaning that the gender differentiation had to be accompanied from the first and in every case by sexualisation. Objects may well have been personified and have received the grammatical distinctions characteristic of the male and female sex, although there has been no taking into account of physical sex; a child may personify a tree and classify it among the male or female objects, although for him physical sex does not exist. We may also take into consideration the fact that if the formal gender is not found in every language, it pervades the languages of those peoples which manifest in their religions and in their life generally a particularly strong tendency to sexual imagery, as is the case, for instance, with the Semitic family.

However this may be, the remarkable tendency of Mrs. X to personify when a child and, later on, to personify and sexualise—a tendency which in a lesser degree is not unusual in children and youth of our civilisation—will be of interest to those whose attention has been drawn to the sex and gender problem in language.

Whatever the interpretation one may place upon the disclosures here related, the glimpse of light they throw into the inner life of a person, not as unusual as most people will imagine, will no doubt be to many a revelation of the wide differences existing between individuals though they be of the same social class and civilisation. For, it must be owned that despite our increasing altruism and the realism of our novelists, playwrights, poets and painters, we still find it difficult to look upon other human beings as differing from ourselves to any considerable extent.

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[1] From *The Nature and Origin of the Noun Genders in the Indo-European Languages*, a lecture translated by Ed. Y. Robbins. New York: Charles Scribner's Sons. 1897.

At the close of the paper we have indicated the momentous influence that a personifying habit, such as is displayed by Mrs. X, must have upon religious life.

The curious associations existing in some minds between vowels and colors formed the subject of the conversation at a recent dinner at which I was a guest. Illustrations of mental forms and of pseudo-chromesthesia were given, and one of the company told of the amusing vagaries into which some French "decadent" poets had been led by a misunderstanding of the facts. He mentioned the famous *Sonnet des Voyelles* of Arthur Rimbaud; the still more surprising *Instrumentation Verbale* of René Ghil, a treatise in which the latter-day poets will find the fixed musical value of each vowel and of each consonant; and, the climax of it all, the crazed attempt of M. Rounardo and Mme. Framen de Labrély to produce a symphony not of sound only but of sensations of different kinds. As freaks of the imagination were in order, and many strange experiences were being told, our hostess said with an uneasy smile that for her neither letters nor sounds had a color value, but that the figures were either male or female and had each a well-marked individuality. There was too little encouragement in the incredulous or quizzical looks of several of those present to induce her to proceed with her revelations, but later on, in private, she readily satisfied my curiosity, and I now place her statements before the reader together with a few comments and no apology, feeling sure that a bit of individual psychology bringing to light some features of the hidden physiognomy of a fellow being can hardly be lacking in interest and may very well lead to a better understanding of those with whom, though in daily contact, we so often fail to "make connexion." What did Sentimental Tommy's teacher know of the real hero of Mr. Barrie's novel? Never once did he meet Stroke, although Tommy was in his class-room all the the year round.[1]

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[1] A somewhat similar case will be found recorded in the *Pedagogical Seminary*, Vol. II., under the title "The Individuality of Numbers."

The lady I am writing of—let her be called Mrs. X—was not acquainted with any experience, similar to her own; moreover, she had never given a systematic account of what is related in this paper, and only rarely had she mentioned the facts in a general way, as, for instance, recently at the dinner-table. When a child, she took it for granted that there was nothing unusual in her ideas about numbers, trees, etc., and consequently did not speak of it. Occasionally when she happened to make some reference to her "old nurse"—an apple-tree peeping at night into her room—she discovered that she was not understood by her playmates and so she would say no more about it. It is only when about sixteen or seventeen years of age that Mrs. X realised clearly that her mental life differed in this respect from that of most people, but she never felt particularly uneasy on that score. It may not be useless for the writer to affirm here his confidence in the exactness of the lady's statements. She was desirous of giving a faithful account of what was wanted, a thing she is as able to do as the average person of good judgment and of culture.

"Figure One, said Mrs. X, is distinctly negative; it does not interest me, but it is a Him."—*A Him?*[1]—"Yes, he goes about in trousers. He is grown up and slender; but beyond that I never had a clear idea of what he was like.

"Two is also a man, good looking, fresh-complexioned and blonde—a commonplace person, a sort of brother to Three."—*What do you mean by a sort of brother?*—"Well, he is a brother, but does not seem to be intimate with him; they have nothing particular to do with each other. Two is a little older than Three. I do not know about the color of his eyes.

"Three is a pretty girl about sixteen with curly hair and a rosy complexion, rather unreflective and very merry. She is perfectly devoted to Four, who makes light of her."

"Four is a brunette, very handsome, very clever, so much more clever than Three! She is reserved; people might think of

[1] The author's queries are put in italics.

her as being haughty, but she is really very nice. I am very fond of her. For Three, she has a kind of affectionate endurance . . . you know, she is so much more clever than Three!

"As to Five, she is a very 'frumpy' old person, tiresome, and flavorless. She wears a wig and lives in a boarding-house. A little fat; don't you know, a sort of figure five. It is so easy to hoodwink her; she is awfully slow of comprehension. She is always acting chaperon for the others."—*I did not suppose there would be a call for chaperons in your figure-world?*—"Oh, yes, she accompanies the young women when they go anywhere."

As I was taking down her last remarks, Mrs. X suddenly exclaimed in the voice of one who is making a discovery, "Isn't it strange? It occurs to me that it is always summer. I don't believe it ever was winter; is it not queer! Girls are always wearing summer dresses."

Before you go on won't you tell me whether the personality of these figures is present to your mind whenever you see or think of a number? —"As soon as I dwell an instant on them their personality materialises, but it remains unnoticed if I am in a hurry, or if the arithmetical meaning of the figures is of much concern to me, as when I have my check-book in hand. When a young girl, the human element in the digits was of more emphatic interest to me than now. It has decreased during the past six years. Perhaps this decline coincided with great sorrows I underwent at that time. Since then, I have lost much of the passionate interest I took in all kinds of people. Otherwise their personality has not changed; they remain as to age, looks, and idiosyncrasies what they always were, for I do not remember their ever being without the well-marked individuality I have been telling you about."—*I can't very well conceive of the way in which these figures can be said to be alive; how, when, do they get into action? This appears to me so odd that it requires a vigorous effort of my imagination to get your meaning.* —"Why, it is plain enough! For instance, if I had to make a little sum, let us say 123+456. When those people are put like that, things will happen between them. Sometimes at school I was very much annoyed and distressed when the teacher would put

side by side people who did not belong well together; for instance Eight and Three. I could not make the sum; it could not be done, that is all. I must say that their doings were not quite spontaneous; they were, in part at least, semi-consciously guided by me, somewhat as when playing with dolls. I would play with figures at times to defeat punishment, when it consisted of an arithmetical task. I have always abhorred arithmetic, as everything else demanding concentration of mind. I used to have very exciting times with my figures. But, although I might wilfully contrive happenings between them, their character was fixed and beyond my power to modify. In idle moments, and I managed to find a great many such moments, I would develop on my slate a human appearance for numbers; and I would often feel that I was not doing justice to their characters when writing them down. But this is a digression; I have not finished introducing you to the digits. We stopped at six.

"Six is a young man about twenty. A kind of masculine counterpart of Three, for whom he is suspected of entertaining tender feelings. His hair is curly and blonde; he is ruddy, broad-shouldered, about five feet eleven in height—an English type. He is very fond of boating and frequently rows on the Thames."—*Are you acquainted with London and the Thames?*—"No, I never was in England.

"Seven: a decorative old piece of bric-a-brac in the shape of a retired lawyer or something like that, tall, thin, scrupulously neat in his appearance, using beautiful English, fussy in trifling matters. A man of distinguished bearing this decorous old Seven with his thin gray hair parted in the middle and brought forward at the sides. He is always predicting the weather or some impending trouble or other; but nobody pays the slightest attention to him or to his prognostications. When things announced have come to pass he never fails to say 'I told you so, but you would not listen to me.'

"Eight might be looked upon as a masculine counterpart of Four. He is about twenty-eight, tall, dark, very good-looking and very clever. I have the impression that he has travelled a good

deal. He is an accomplished person; he fences, plays music, speaks several languages,—a little conceited, sarcastic, and reserved. You see, a very attractive fellow, and I must say that I am rather in love with him. He and Four distinctly care for each other, but they are always hurting each other's feelings.

"Nine is an entirely different kind of man; a hard-working, industrious, uninteresting person,—the sort of person that would be a trustee, you know: honest, intelligent, but very limited and without imagination. A good family man . . . only I don't know his family.

"The compound numbers do not have as a rule a constant personality; only a few of them have. Nineteen for instance is a good deal like Four; Twenty resembles Six, and Fifteen bears a strong likeness to Three. You see that the personality of the separate figures making up the numbers is for nothing in the results. I have no close personal interest in any of them.

"Have you noticed that all these people are gentlefolks, or have been so? Some of them have degenerated; Five for instance, for lack of means. She is always talking about the past, poor thing! She has no children."—*It is a very interesting collection of people to have around, I am sure, but I do not yet see clearly what sort of life these people lead. What do they do?*—"Some of them are rather inactive, but that could not be said of Three, Four, Six, and Eight. I have really much affection for them; they are such rare people! What do they do? Well, they have no end of love affairs. I witness most thrilling love scenes, as detailed and distinct as in real life."—*It goes on all the time even yet?*—"Yes, even now; is it not strange that they do not learn better! But they do not marry, and do not grow old. Their relations with each other are episodic, not continued and progressive. I was telling you that Four and Eight frequently wound each other's feelings. One of the reasons for this is that Four used to frivol with Six, a very nice young fellow but quite boyish. She does not do it as much now as in the past. Three and Six are very open in their expressions of regard; Three is so young, you know. They are often ridiculous. Three is in awe of Eight who used to tease her

good-humoredly. The love episodes are vivid enough, but brief, because I have to pass on to other things."—*Please tell me when, on what occasion, these scenes take place.*—"Without any particular occasion. They take place when I am reading in my room, or when at my desk, if my attention chances to be caught by a numeral. I often say to one or to the other of them, 'Oh, I wish you would go away, that I might do my work,' for it is as much of an interruption as if somebody were speaking to me."

Do you know whether the mood of your number-friends changes with your own humor?—"No, it does not. They are never depressed and, as I have just noticed, they enjoy continued fair weather; but what I read often suggests their actions.

"To this day I find relief in the company of these people. There are times when I say to myself, 'O that I might be left alone to live a while with my people.'" When I asked what was her relation to them, I was surprised to find that I had put an absurd question. "I have no dealings with them; of course not, I could not." And when I insisted upon having a reason, she only repeated, "I do not know why; I simply could not. It seems strange you don't understand; though of course, you cannot since you don't know them. It is like water and oil; we cannot mix."

On continuing to question, it came out that not only numerals, but also everything else, had sex and a more or less clearly marked individuality. "The minute I think about anything, it assumes personality: furniture, fruit, flowers, etc. For instance my rotating chair is a dullard; he is so slow that he often makes me impatient and I tell him 'Oh, go away, you stupid thing.' When I was in my teens this personal side of objects filled and dominated my life. Trees were particularly dear to me. But I have not yet told you that the letters of the alphabet also have personality. It is a much vaguer one than that of numbers and it is really only with the first letters of the alphabet that I am well acquainted. *A* is a dignified matron, handsome and distinguished. She lacks imagination, though. *B* is also middle aged, sometimes a man and sometimes a woman."

At this point Mrs. X, noticing that in taking down her remarks

I wrote the small letters *a*, *b*, exclaimed, "But I am speaking of capital, printed letters; only printed letters have personality. The small ones are the children of the large ones, but *a* is not necessarily the child of *A*."

"*C* is a young man, a sort of captain, gallant and daring."

As Mrs. X appeared to have little more to say about letters, I inquired why it was that they occupied so modest a place in her imaginary world. "Might it not be," she answered, "that the difficulty I experienced in learning arithmetic and my dislike for it account for the greater definiteness and wealth of meaning of the figures when compared with the letters? The very irksomeness of arithmetic drove me to dwell upon the personal side of the figures; I would thus begin to attach myself to them as I do to real persons, and they would become firmly established in my affections. It was not so with letters; the meaning of what I was reading would keep my attention and so my dreaming propensity was held in check. I do not know which were first, the number or the letter-personalities."

A while ago you mentioned your affection for trees. Tell me something about it, please?—"Yes, my dearest friends in nature are trees, apple-trees above all others. I always had a strong sense of their personality. A pale, thin tree is likely to be a woman. Tulip trees, poplars, birches, and beeches, are always women, while oaks are always masculine. Some species have men and women among them."—*And the weeping willow?*—"It is a woman, of course. Apple-trees are always old people, kindly and old. I love them, O I just love them! When we were young, my sister and I, we lived much outside, running about, climbing into trees like boys. There was behind our house a dear apple-tree for which I had a romantic attachment. It was rather hard to climb and I alone of our band of children could get into it. I had a delicious feeling that she was a strong mother caring for me and for the robin who lived in it. At night she would sometimes look into my room through the window. When sitting in this tree I would talk with her. As we went away for the winter I would leave things with her, my dominoes for instance, to keep until the next season to-

gether with the robin's nest."—*Did you care particularly for your dominoes?*—"Why, yes, a good deal. I should have told you that they were my dolls; we did not play dominoes, but dolls, with them. And, by the way, you may like to know that I always hated ready-made dolls; they looked to me so stupid. I could not do what I wanted with them, while with dominoes I could accommodate my fancy and turn them at any time into any kind of person I chose. I played dolls with dominoes until I was twelve, I believe." —*Did your friends know about the apple-tree's being a foster mother to you?*—"I hardly know, I did not think of telling them. People I did not like I would drive away from the neighborhood of the tree. I have also pleasant recollections of three plum-trees: two small ones who were the children and one large one. I would also leave things with them to keep through the winter.

"For brooks I had a particular fondness, and, strange to say, I found great delight in frightening myself with them. We spent once two months of the summer near the Connecticut River. On one side of the road leading from the house to the river and then along its banks there were cornfields, and, beyond them, marshes and a small stream. I would go to the marshes almost every evening during the two months, alone, and sit motionless, listening to the whispering voice of the wind in the corn and to the murmur of the water and then, suddenly, start for home as fast as I could run, seized with panic. And yet I knew there was no danger. I always loved solitude; whenever I could I would get off in the country alone. Nevertheless, I had very warm feelings for my brothers and sisters as well as for inanimate objects. I recall a little plaster figure that stood on the mantle-piece. When my sister broke it accidentally I secluded myself to cry, although we had never been allowed to play with it. In fact, since I am grown up I have often lamented the tenacity and the warmth of my feelings for people; they master me and stick to me even when they are no longer deserved. It is at times a heavy burden."

It will be hard for the many unimaginative, business-ridden Americans to see in a form of consciousness so different from theirs

anything more than the over-indulgence of a lively fancy, such as most of us are guilty of at some time or other during adolescence; it indicates merely an hypertrophied disposition to dreamery not worth talking about, they will say. Such an opinion falls short, it seems, of a sufficient appreciation of the case. An anthropomorphic passion such as the one revealed here is characteristic of a psychological type from which the matter-of-fact, analytical, objective, person is as far removed as one human being can well be from another of the same civilisation. No doubt Mrs. X is gifted with a riotous imagination, but, although necessary, this quality of mind is not at all adequate as an explanation; why should it spend itself in the creation of living persons out of inanimate objects? That is the trait which particularises the case of Mrs. X. It betokens, it is evident, the existence of peculiar affective forces. Under their guidance the intellect creates a world in which hard facts are but scantily represented, and yet a world potent in the formation of the person's opinions, judgments, and, most of all, in the molding of her affective attitudes towards, and reactions to, the world of objective existences.

We will not attempt to trace the influence that this mental make-up must infallibly exercise on the psychological physiognomy. It would be a task beyond the scope of this paper. Neither shall we try to adduce reasons for the connexion between specific objects and particular personalities: why seven is a "decorative old piece of bric-a-brac," why the apple-tree is a dévoted foster mother, or why three and six, as also four and eight, stand for assorted couples, the smaller number being the female and its double the male, are queries of subordinate interest. Mere chance, the looks of the thing, its quality or virtue, its situation, and many other properties and contingencies, will account for these associations. We shall limit ourselves to a few considerations touching the influence of the passion of Mrs. X on her religious life.

The vividness of one's religious sentiments, and consequently the power of religion, is, at least at a certain intellectual level, closely dependent upon the ability to form and to maintain a clear apprehension of the divinity under an anthropomorphic form.

There are unfortunate persons, true lovers of virtue, who, despite the best of dispositions, are denied the benefits of religion. They know of it only what the initiated affirm to be its accessories: ethical, judicial, and æsthetic impressions and ideas, and this simply because of their deficiency in that particular kind of affective imagination with which Mrs. X appeared to be so remarkably gifted and without which the clothing of the efficient principle of the universe in human shape is hardly possible.

We thought that Mrs. X had probably been able early in life to endow the divine with a lusty personal reality and had maintained with Him a lively and continued intercourse. But this conjecture was not entirely justified by her statements concerning her childhood. She said: "I don't think I bothered with God when I was a child, except when frightened. Usually I did not care a button for Him. I would say my prayers as directed, but automatically; it meant very little to me. Only if I got into a plight I would cling with the completest faith to what I had been taught about God's power and his readiness to answer our prayers. It was then a source of great comfort to me." It is clear that God was not to her the everpresent Friend and Companion, but only a far-off, mighty, and uncongenial personage whom one lets alone as much as possible. Other beings, discerned through the physical appearance of nature, lay nearer to her heart and to her imagination, and engrossed her attention to the exclusion of God. This, after all, is perfectly natural and healthy.

When we pass from childhood to adolescence and maturity, the problem in hand assumes a highly serious aspect. Of the possible outcomes the following are worthy of consideration. She might have followed the way leading to the disintegration of the traditional feeling and willing Divinity and replaced it by impersonal cosmic forces molding the physical as well as the moral universe into an organic system. In this case, her peculiar way of reacting to her environment helping her, she might have found in the feeling of unity with the cosmos an effective religious power not very different in quality from the sense of physical and moral dependence upon God said to be the root of the religious consciousness. Or,

if this conception of the universe was not within her possibilities, the criticism, unavoidable at her stage of culture, threatening destruction to an anthropomorphic Divinity, might have been held in abeyance by her love for the personal and her thirst for intercourse with feeling and willing creatures. In this latter case she would present the instructive and not infrequent spectacle of a person thrusting back light to keep possessions accounted dear. A person with the psychic endowment of Mrs. X might do this successfully, provided scientific training had not strengthened beyond control the need for clear conceptions and the habit of facing all problems irrespective of their affective consequences to one's self. The advantage to her of this insecure position is that she would escape the pathetic torments endured by many sensitive and religiously inclined souls. In this connexion one is reminded of the case of the unfortunate Romanes.

These and similar thoughts having crossed our mind, we could not refrain from asking Mrs. X to let us peep into her religious consciousness, and as we had a set of printed questions prepared for an investigation in the field of religion, we handed her a copy of these. Many devout people had found no objection whatsoever to answering them. When she had read the first queries and had fully grasped their purpose, she recoiled in evident distress. Her confused apologetic refusal implied that she did not dare look her beliefs squarely in the face; only to think of it threw her into a panic. When asked how this was, she made no difficulty in acknowledging that inquisitiveness in this part of her life might mean death to many a cherished and indispensable persuasion.

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ON THE NATURE OF SCIENTIFIC LAW AND SCIENTIFIC EXPLANATION.[1]

THE search for the occult causes, the hidden springs, that move the machinery of that great and unending panorama of sensuous phenomena which we call the universe, is as old as the human mind itself. The explanatory principles of the world, the elements from which it was supposed to have been constructed, were called by the Greeks ἀρχάι, which means the beginnings, the ultimate elements. These architectonic elements, the primordial mosaics and building-blocks of every world-view, took their distinctive form and coloring from the type of individual and national mind, the stage of civilisation, the dominant characteristics of the thought and occupation of the period. With the savage they were spiritual and animistic; with the Hindus they were mystical and ultra-esoteric; with the Jews, ethical and theological; with the Phœnicians, if anything, commercial; with the Romans, political and juristic; with the Greeks, more abstract and in every way more symmetrical: the cobbler cannot eliminate his last from his world-view; the tailor his goose. They all represented abstractions, more or less partial and incomplete, of the features of reality; they were rarely com-

[1] The present paper was read before the Physical Section of the Science Club of Northwestern University at Evanston, in February, 1899, and in part also before the Chicago branch of the Esoteric Extension, in December, 1898. This latter occasion will account for the frequent references to mysticism. The paper does not profess to be a discussion of all the aspects of the intricate problem indicated by its title, but is intended rather to emphasise and elucidate some of the more salient points of view that have issued from relatively recent research in the philosophy of science. On this point and in order to dispense with detailed references in each case, the author wishes to acknowledge at the outset his general indebtedness to the works of Dr. Paul Carus, and especially to those of Prof. Ernst Mach of Vienna.

prehensive; they rarely embraced the essential and the universal. But they all bore the same distinctive trait; they were an effort for mental economy,—an attempt to reconstruct the Many from the One, to fix the incessant and dizzying flux of events by a few simple and familiar concepts: they were all more or less monistic.

To trace the development of all these varied struggles of the human intellect to compass Being, from their initial crudity to the refinements of modern monism, is the business of the history of philosophy and science; we are concerned here with the central and linking concepts only of these attempts at explaining the world,—the concept of natural law and the nature of scientific explanation generally.

DEVELOPMENT OF THE NOTION OF LAW. PYTHAGOREANISM, AND THE SCIENCE OF THE GREEKS.

Psychologically speaking, it would be a mistake to suppose that the concepts of natural causality and natural law, in their modern scientific acceptation, are parcel of the primitive and necessary furnishing of the mind. Like all other things in nature, they too are products of evolution.[1] They have grown and constituted themselves in the human brain from the very simplest beginnings, and have passed through all the demonstrable stages of development of that magnificent and multifarious commonwealth of feelings, images, and concepts, which we call the human soul. Starting with mere sense-impressions of regular sequences or of periodicities (as the succession of day and night, the recurrence of the seasons, etc.), and taking initial shape merely as vague and subconscious sentiments of happenings-before and happenings-after, —being more in the nature of expectations than convictions: then, by the continuing incessant action of external nature and the responsive *reflective* action of internal nature, the mind itself, gradually assuming the aspect of a composite photograph, with everything blurred but the essential features; and finally by a supreme and absolute effort of abstraction stripping themselves of every

[1] Ribot, *Evolution of General Ideas*, pp. 180 et seq.

vestige of their concrete forms:—these concepts of natural causality and natural law have, in the world in which we have taken our being, evolved along with us through every ascending stage from the phase in which they led the geese of an English village to the town-square on market day, in the expectation of finding the spilt grains of corn,[1] to the magnificent outbursts of determinism which characterised the utterances and the achievements of a Newton and a Laplace, and the conceptions of a D'Alembert and a Kirchhoff.

Even in historical times the transformations wrought in these concepts have been nothing short of marvellous. The ideas of natural law and of causality which obtained in the seventeenth and eighteenth centuries differed totally from the ideas held by antiquity on this subject, and differ greatly from the ideas held by scientists to-day. To the Romans, the order of nature, like the order of their empire, was entirely social and juristic; their conceptions of law and causality were based upon their own most immediate experience,—that of a police force; and it was this conception that was given to the Christian science and the Christian philosophy of the Middle Ages. But mingled with it was the horrible legacy from the East,—a legacy of portents, miracles, catastrophies, monsters, and freaks, which made of Nature a veritable pandemonium of disconnected events and erratic happenings. Such is the picture portrayed in the companion-pieces to the Revelation of St. John that sprang up mushroom-like in Asia Minor in the first centuries of our era; a picture in which every tribal deity and demiurge shaped Nature to conform to the demands of his own special prophets.

But in all this vast expanse of Stygian darkness was one bright spot, which had its inception in the dimmest epochs of the past, which shone with intense brilliancy for a few ages, then flickered and went out, till it was relighted in the sixteenth century. I refer to the philosophy and science of Greece. Here the conception of the universe as a law-determined cosmos took its being, and its

[1] Romanes, *Animal Intelligence*, p. 314.

rise was concomitant with the development of Grecian Mathematics.

The giant personality in that development, as we are considering it, was the mystical figure of Pythagoras. It was reserved for him to make a really decisive epoch in the history of science and philosophy. Where others had grasped only the fleeting and unessential features of existence he seized the eternal, the universal, and the necessary. He was the first really to appreciate the rôle which the laws of form played in any philosophical scheme of explaining the world. He saw in mathematics, in which he was a great discoverer, the very backbone of existence, the core which ran through the universe, the support and essence, as it were, of Being. So successful was he in resolving reality in the crucible of numbers and geometric relations,—we know his explanation of harmony and of the motions of the planetary bodies,—that the entire science became permeated for him with a divine afflatus, and the secret doctrine, the genuine esotericism of truth, to which only the pure were admitted, was made synonymous with mathematics: the ἐσωτερικοί in all the subsequent history of Pythagoreanism were the μαθηματικοί.

It was indifferent that his doctrine degenerated into a numerical mysticism. He had struck the keynote which resounded through every philosophic and scientific symphony of the ages to come. He had disentangled the red thread of the universe which the human mind was ever afterward to follow.

To analyse the reasons for the general failure of the Greeks in the experimental sciences, is not a part of our main task. Leucippus stated the atomic theory as clearly as any modern physicist; Democritus formulated the doctrine of the specific energies of the nervous system almost as distinctly as Johannes Mueller; Anaximander anticipated Kant and Laplace in cosmogony, Lamarck and Darwin in biology. Yet these speculations lacked distinctively the criteria that characterise their modern counterparts as science. Was it type of mind, lack of a sense for experimental observation, lack of instruments of precision? Partly, but not altogether. Ptolemy actually measured and made a table of the refractions of

light in air and water (see Fig. 1), and he also knew from his calculations of tables of chords the values of the sines of angles; yet he did not discover the law of Snell and Descartes. So, too, in astronomy, there was no dearth of measurements and observations, and, here even, there were genuine scientific results. Whewell says the Greeks did not have the *appropriate* ideas,—which is very true; but we know this; what we want to know is *why* they did not have the appropriate ideas. In point of fact the weakness of the Greeks, as contrasted with modern nations, in experimental science, is no more inexplicable than the weakness of individuals, as contrasted with one another. If Ptolemy did not discover the law of the refraction of light with all the facts and all the necessary intellectual tools in his possession, neither did Galileo discover the causes of

PTOLEMY'S TABLE OF REFRACTION. (150 A. D.)[1]

ANGLES OF INCIDENCE AS MEASURED	ANGLES OF REFRACTION AS MEASURED	EXACTER VALUES
10°	8°	7°17′
20°	15.5°	14°47′
30°	22.5°	21°54′
40°	28°	28°40′
50°	35°	34°52′
60°	40.5°	40°16′

Fig. 1.

the action of atmospheric pumps, although he, too, knew all the facts. Science is a continuity; it must not be conceived as a series of isolated products springing up in isolated brains, but as a continuous product taking shape in a succession of brains; each age is but an aspect of its evolution; it is not necessary that all of its growth should have taken place in any one nation or at any one time.

THE DEVELOPMENT OF MODERN ANALYSIS.

But one thing the Greeks certainly did lack which was requisite to the rapid and rigorous development of physical principles, and that was what moderns call mathematical analysis. Their

[1] From Dannemann's *Geschichte der Naturwissenschaften*, Leipsic, 1898.

strength on one side was their weakness on another. Their geometry gave them a subjective notion of harmony and necessity in the universe, but it did not furnish them the means of rapidly manipulating in their own minds, and of accurately following and reproducing, the course of that harmony and necessity. Their theories, their mental models of events, remained largely speculations, because they could not readily be submitted to quantitative verification.[1] And so their notion of scientific law had not the same objective applicability, the same demonstrability, as it has to us moderns; it remained rather a postulate of metaphysics than a truth which could be verified in individual instances.

But with the development of arithmetic, algebra, and modern analysis, a new sphere of experience was unrolled,—a sphere of experience that ran parallel to physical experience, but lay immediately at hand, and was absolutely under control. Its conquest has been step for step the conquest of physical science, and has marked step for step the establishment of the concepts of law, of causality, and of determinism in science. With the mastery of the number-continuum came concomitantly the mastery of the physical continuum, and that almost barbaric worship of mechanical law which constituted the glory of the seventeenth and eighteenth centuries. No one can have lent himself to the impressions of the literature of this period without having felt the compelling truth of this idea.

First came the Hindu system of numeration, then the invention of decimal fractions, of logarithms, the solutions of cubic and biquadratic equations, the invention of algebraic notation and symbols, the theory of exponents, algebraic geometry, the theory of series, and the calculus; steadily the precision and simplicity of these systems and engines of thought were pushed toward perfection, and daily the ease and mechanical certainty of their manipulation tested by the most varied applications; until finally the

[1] This is almost the only difference in point of real superiority of the Kant-Laplace theory over that of the ancient Greek cosmogonists; and of Kelvin's vortex-theory over Descartes's: both Laplace and Kelvin could point to precise mathematical and mechanical possibilities.

whole development reached its culmination with Leibnitz and John Bernoulli in that flower of modern mathematical thought—the notion of a function.

It is unnecessary for me to insist here on the beautiful associations which the notion of a "function" awakens in the mind of the mathematical student—the iron necessity which links the parts that constitute it, the magic flow of its consequences from the simple mechanical performance of certain well-indicated operations. All who have seen and felt in the flesh the growth of an algebraic curve, and of the myriad yet determined forms which it is capable of assuming, can appreciate the conviction of the inquirers of the seventeenth and eighteenth centuries who had achieved in this field their greatest triumphs, that here was the incarnation of natural law—the Aladdin's lamp which they had merely to rub to see the universe in all its luxuriance of form spring up bodily before their eyes. *To press a button*, and to set in action the machinery of Nature has been the dream of the savage and the scientist alike.

DESCARTES'S APPLICATION OF MECHANICS TO GEOMETRY.

The union which Descartes effected between geometry and algebra was not purely a mathematical achievement; it was also fraught with momentous consequences for mechanics and physics. Geometry became flesh here; was transplanted from the realm of ideal form to the realm of real form; now worked from within, not from without, Nature; it was conceived to have a motional, a plastic, aspect; and no more salient illustration of the development we are considering can be found than in the opening paragraphs of Book II. of the *Géométrie* (1637). Descartes objected to the ancient division of curves into *geometrical* (those made with ruler and compasses) and *mechanical* (those requiring other instruments). The ruler and the compasses were also machines, he said, and possessed no intrinsic natural precedence over other mechanisms. The essence of geometry, he remarked, was the exactitude of the reasonings, not the simplicity of the mechanical appliances used as auxiliaries to reasoning. And just as there was no mechanism so complicated as not to have its geometrical duplicate, so there was no

geometrical construct so complicated as not to have its possible mechanical duplicate. (See Fig. 2.) Geometry and algebra are exhibited here as the counterpart of the mechanics of nature, and the mechanics of nature as the counterpart of algebra and geometry. And this conception was extended by Descartes's successors to nature in its entirety.

DESCARTES'S INSTRUMENT FOR THE GENERATION OF CURVES OF HIGHER ORDERS.

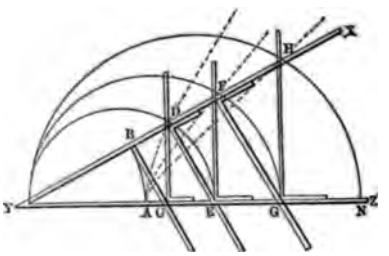

Fig. 2.

The rod *YZ* is stationary; the rod *YX* is jointed at *Y* so as to form a variable angle with *YZ*. When the instrument is closed, the points *B*, *D*, *F* and *H* meet at *A*. When opened, the rod *BC*, which is fixed on and at right angles to *YX*, pushes towards *Z* the rod *CD* which is movable along and at right angles to *YZ*; in the same manner, *CD* pushes *DE*, which moves along at right angles to *YX*; *DE* pushes *EF*; *EF*, *FG*; and so on *ad infinitum*. The curve traced out by the point *B* in this motion is a circle, while the curves traced out by the points *D*, *F*, *H*, etc., successively increase in complexity. But the latter curves, contends Descartes, are no less geometrical than the circle. Their mode of generation can be as distinctly and clearly conceived as that of the circle, and they are consequently just as much susceptible of mathematical treatment: the possibilities of natural forms, in other words, are duplicated by algebraical forms and are controllable by them.

THE RÔLE OF THE NOTION OF FUNCTION IN SCIENTIFIC EXPLANATION.

Having examined history, let us now analyse some of the results.

Every department of inquiry conceives its phenomena to be constructed of a certain few fundamental elements—in mechanics it is masses, spaces, and times; in biology, it is gemmules, idioplasms, plasomes, and what nots. The scientific ideal is the reduction of the connexion of these phenomena, or of their substitutes,

the fundamental elements, to the form of a mathematical function.[1] The problem is: Given what few simple and known events, how can many unknown and complicated events be obtained by way of deduction, that is *a priori*, or without recourse to experience? The problem is equivalent to what in mathematics might be termed "the search for the *form* of the function"; the independent variables, the fundamental elements, are known or posited,—in what manner must they be handled to produce the *right* values of the dependent variables, i. e., the unknown and sought phenomena? (In the following examples, consult the corresponding ref-

TABLE ILLUSTRATING THE RÔLE OF A FUNCTION IN SCIENTIFIC EXPLANATION.

I.	$s = \frac{1}{2}gt^2$
II.	$T = \pi\sqrt{\frac{l}{g}}$
III.	Roots = F(Coefficients)
IV.	Sensations = Log (Weights)
V.	Animals and Plants = F(Environment, Heredity, Selection, etc.)
VI.	Heredity = F(Ids, Determinants, etc.)
VII.	Heredity = F(Assimilation) . . . .
VIII.	Ideas = F(Theology, Metaphysics, Science)
IX.	Society = F(Organisms, Mind).

erences of the table of typical functions.) When Galileo discovered the law that the spaces traversed by falling bodies increased as the squares of the time (I); when Huygens discovered that the times of small oscillations of pendulums were directly proportional

[1] The notion of "function" is essentially that of *dependence*. A quantity is said to be a *function* of another when its variation *depends* on that of the other. The pressure at the bottom of a vessel containing a liquid is a function of the height of the surface of the liquid; the circumference of a circle is a function of its radius. In the expressions $y = x^2 + x + 1$, $y = \sin x$, $y = \log x$, the quantity y is said to be a function of the quantity x, because there subsists between them in each case a certain relation, indicated by the symbols, rendering the values of y dependent on the values of x. The quantity y is called the *dependent* variable, and x, which is supposed to be taken at will, is called the *independent* variable. The nature of the relation subsisting between them is called the *form* of the function, and is indicated in the last two expressions by the functional symbols *sin* and *log*. When a functional relation generally is to be expressed, then certain conventional general symbols are used, as in $y = F(x)$, $y = f(x)$, $y = \phi(x)$, etc., where F, f, ϕ, etc., denote merely a general determinateness of connexion, afterwards to be more precisely specified by symbols of actual operations.

to the square root of the length and inversely as the square root of the acceleration of gravity (II); when Ferrari, Descartes, and Euler, gave their solutions of biquadratic equations (III); when in psychology Weber discovered the supposed law that sensations of pressure varied as the logarithms of the weights causing the pressure (IV); when in biology Lamarck and Darwin proclaimed the law of the variation of organisms in accordance with the exactions of the environment and the principle of Natural Selection (V); when Weismann by his theory of ids and determinants (VI), and, recently, Félix Dantec, starting merely from the basis of physiological assimilation, sought to reconstruct deductively the facts of heredity (VII); when Comte stated his law of the three stages of mental development (VIII); and when in the last half century the sociologists proclaimed the analogies existing between the complex phenomena of social development and the known laws of biological and psychological development (IX); these inquirers, one and all, either actually discovered, or believed they had discovered, the *form of the function* by which, through sheer mechanical manipulation, the dependent variables of their department of inquiry could be uniquely or multiply determined from their independent variables; by which the incompletely known facts of their province could be mechanically converted into completely known facts; by which the curve of their special reality could be deductively constructed, both for the future and the past, as the graph of an algebraic equation can be plotted throughout its whole extent from a mere knowledge of certain initial numerical data.

Either there is a discoverable constant connexion between certain given events of nature, or there is none. The *form* of that connexion it is the business of the inquirer to discover. The nature of the form, its simplicity or complexity, will vary according to the character of the facts and the insight of the inquirer. But in every case the aim will be so to shape or select the initial data that the simplest possible connexion shall be forthcoming. The mathematical ideal, or rather analogy, which we have proclaimed, is indifferent; the connexion, whatever its character, whether that of the simple law of squares or cubes or of logarithmic and trigonometric

functions, or of the purest every-day analogy, is alone essential. The determination of a physical constant, the measurement of the cephalic index of the Neanderthal skull, the plotting of a curve showing the variations of the atmospheric pressure at London for the year 1898, are legitimate and necessary scientific work; they may possibly involve an increase of useful knowledge, but they are not the enunciation of a scientific law, they are not *necessarily* science; in themselves they are no more than the facts themselves; they are absolutely commensurate and coterminous with the facts; they do not involve the determination of other unknown facts. Such is the nature of a large part of the statements of sciences like natural history, meteorology, biology, psychology, etc. Many of their results are mere word-for-fact and fact-for-word descriptions of the phenomena of their respective provinces; *empirical* laws betokening nothing but what is directly expressed in them. But the correlation of the facts so discovered with indefinite numbers of other facts, not necessarily known, by virtue of the *form* of their connexion with those other facts, which connexion is the thing to be discovered, *is* the statement of a scientific law. Thus, to recur to the examples last mentioned, the statement of the reversibility of heat and energy, of the form of that reversibility, and the consequent utilisation of the physical constant involved; the deduction or induction from the measurements of the skull of the primitive Neanderthal man of a criterion for the determination of the race-characters of pre-historic humanity; the indication of a definite form of dependence of *unknown* atmospheric phenomena on the variations of the barometric curve at London;—all these are or would be the enunciations of scientific law as properly understood. We see that in all cases we return to our primitive type and ideal.

I will now give two very simple instances of actual scientific laws, and remark in connexion with them, the special features of economy of thought, prophesy of the future, and reconstruction of the facts of the past, which they involve.[1] And since we are con-

[1] Mach, *Mechanics*, pp. 147, 481 et seq.; and *Popular Scientific Lectures*, p. 186 et seq.

cerned with their formal aspects only, we shall disregard all their self-evident physical obscurities.

THE LAW OF FALLING BODIES.

For us, who from our school-days are as familiar with the laws that govern the fall of bodies as we are with the fact that the earth revolves about the sun, it is difficult to imagine the ideas which prevailed on this subject in the early years of the seventeenth century, when people were accustomed to believing rather what they were told than what they saw. Yet simple as these laws may now seem to us, they constitute one of the grandest and most enduring achievements of the human intellect, and are the beginning of all modern science. We owe their discovery to the genius of Galileo. Here science can be seen in its nascent form; here its distinctive marks most clearly perceived.

The central conception of the laws of falling bodies is, that the distances traversed by a falling stone in the 1st, 2nd, 3rd, 4th, 5th, etc., second of time are as the odd numbers, 1, 3, 5, 7, 9, and so forth; that is to say, knowing how far a stone falls in the first

GALILEO'S LAW.

1ST SEC.	2ND SEC.	3RD SEC.	4TH SEC.	5TH SEC.	6TH SEC.
1	3	5	7	9	11

General formula $s = \frac{1}{2}gt^2$.

second of time, all we have to do to find how far it falls in the second second is to multiply that distance by 3; in the third second to multiply it by 5; in the fourth second to multiply it by 7; and so on. Now, every one can calculate mentally the series of odd numbers to infinity, by simply adding 2 each time to the number that precedes, or by subtracting the squares of two successive numbers, and consequently, *supposing the conditions to remain the same*,[1] every one could calculate mentally the distances traversed by a fall-

[1] It was discovered by Newton that the acceleration of gravity varied with the distance from the centre of the earth. But this fact is unessential here. The identity of the conditions is at the basis of every scientific formulation, and constitutes an aspect of the subject not to be considered at present.

ing stone in every successive second of its flight into all eternity, without so much as resorting to experience a single time after the first.

This is the significance of a natural law: to do mentally what would otherwise have to be done physically, by arduous and sometimes absolutely impossible measurements. Note its economy; note its power of prediction; note the perfect mastery involved in its use over the unseen and sensually unseizable actions of nature. Here was the beginning of that mighty flight of the human intellect by which, three centuries afterward, with pencil and paper only, the brain of Leverrier called forth from the occult recesses of the heavens, the unknown and hitherto unseen planet Neptune. Here, too, was the beginning of that wonderful development of physical science by which in our own century a blind man, Plateau, by rightly combining the right thoughts and the right facts in his imprisoned brain, foretold and foreplanned the beautiful experiments with molecular forces which it was never given him to see.

"I can call spirits from the vasty deep," said the magician Glendower in the play; "And so can I, and so can any man," retorted Percy, "but will they *come* when you do call for them?"

But they have come at the beck of Science,—and not spirits, but planets, and worlds both living and dead, in all their real beauty and all their real truth.

* * *

Let us recapitulate the lessons of Galileo's discovery. A mathematical law, the construction of the series of odd numbers, over which we have unlimited mental power, is substituted for a series of natural phenomena over which, owing to their myriad and practically inacessible forms, we have sensually no power. We reconstruct, remodel, and mimic in the brain, by a sort of talismanic formula, which requires but a moment of time, the past and future course of nature,—namely, all the possible distances traversed in all possible moments by a falling stone. The mind *covers* nature, so to speak.

THE LAW OF REFRACTION.

We will now turn to our second example, and observe the same factors at work.

Let a beam of yellow light, *AB* (Fig. 3), enter at any angle of incidence a body of water, *DE*, *LM*. The beam of light suffers, in general, what is called refraction,—a breaking or bending from its course,—and in the water follows the course *BC*. To each of the infinite number of possible angles of incidence, *i*, between the vertical *BF* and the horizontal *BL*, corresponds a definite angle of

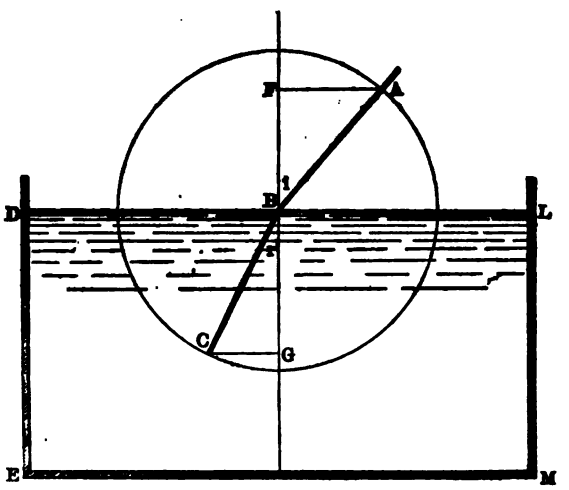

Fig. 3.

refraction, *r*. What is the relation that in each case connects the two? What is the magical formula by which, from knowing only the one angle, *i*, the unknown magnitude of the other angle, *r*, can be ascertained? Given what data, and given what universal rule or law, can the unknown facts, the directions of the refractions in the water, be accurately calculated, accurately remodelled in the imagination, without recourse to experience, without any actual measurement whatsoever? This is the question that Science puts. It is economic in its aspect, it is prophetic in its aspect. Thousands and thousands of possible cases, all utterly beyond the power of the human brain to remember,—how can they be reduced to a single case?

The answer was given in the formula of Descartes $\frac{\sin i}{\sin r} = n$, which says that if we divide, in any case whatever, the line *FA* by the line *CG*, the quotient will always be the same, namely a constant number, *n*, which in the case of water is 4/3. To embrace, therefore, all the multitude of cases of the refraction of light from air into water, all we have to do, knowing Descartes's law, is to make a *single* measurement, once for all time. Having made that measurement, and having found the value of the constant, *n*, which is here 4/3, we can, by the help of a table of sines, calculate in advance the angle of refraction of a ray of light, *AB*, falling on water, *DL*, at any angle of incidence, from 0° to 90°, that is to say, in any position which *AB* may take, from *BF* to *BL*. It is only necessary to divide a single number each time by 4/3, and to find in the table the angle corresponding to the quotient,—a task of a few moments replacing with the pencil what might in some phases of modern technical industry be the labor of hours with costly instruments.

The significance of those special aspects of natural law which we have just emphasised may be brought out still more clearly by the following consideration. It is possible, by a simple combination of four rods and a pivot, to construct a working model of the laws of refraction, which, by a mere backward and forward movement, can be made to *mimic* and indicate all possible refractions. Such a machine for air and water is represented in Fig. 4. Two rods, *AOK* and *BO*, are pivoted independently at the center, *O*, and rest their free ends, *A* and *B*, in grooves in another rod, *DC*. The rod, *DC*, is free to move backward and forward along *MN*. Now, if the line, *AO*, measures four inches, and the line, *BO*, three inches, then as the rod, *DC*, slides back and forth, the arrow, *K*, will indicate mechanically every possible angle of refraction for every possible angle at which the ray, *BO*, can strike the surface of the water.[1]

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[1] This model is merely a mechanical reproduction of Snell's geometrical construction; Snell having antedated Descartes in the discovery of the law of refraction.

What have we done here? We have replaced Nature by a machine. The machine mimics Nature. By a mere mechanical movement, I can produce by the machine in miniature all the possible effects that Nature can produce in reality,—at least, in that particular aspect in which we are here studying Nature. I can follow, mimic, and outrun, Nature, without recourse to Nature. The simplicity and economy of the machine is the first thing to be noted; its power of being substituted for Nature, its being a miniature copy of Nature, is the second thing to be noted.

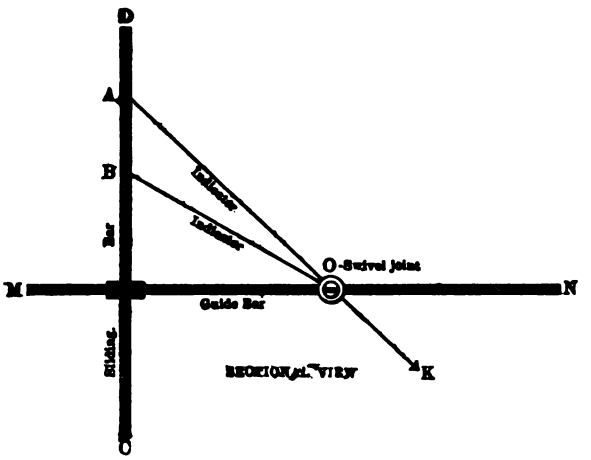

Fig. 4.

DESCRIPTION AND COMPARISON.

I shall now interpolate a few remarks as to the meaning of the term *description*, on which we seemingly threw a slight in speaking of the natural sciences. *Bare* description does not necessarily constitute the essence of science. When Kirchhoff said that it was the object of mechanics to *describe* in the simplest and completest manner possible the motions occurring in nature, he demonstrably did not mean that the essence of mechanics was a statistical word-for-fact tabulation of the motions of the universe; if he did, the *Mécanique Analytique* of Lagrange might have been written by a Patagonian savage. He merely aimed at a restoration of the Newtonian ideal of science, which had been intimated before him by D'Alem-

bert. That ideal was, in stating the facts to state *only* the facts, or relations of facts, involved, and not to state purely superfluous matter and creations of the imagination, or even analogies, not involved. It was description of actualities as opposed to description of fictions. *Hypotheses non fingo*, said Newton; "I make no hypotheses." I state only what is necessary and sufficient to *describe* what gravitation is, what moving force is; I supply no supererogatory speculations as to what are their occult causes.

The law of the inverse squares *is* a description of the motions of the heavenly bodies, but it stands on an entirely different plane from the description of a topographical chart of the State of Illinois. The real aim of Newton and Kirchhoff was the ousting of metaphysics from science. The ultimate object in building up the science of mechanics is to afford *the means* for rapidly and completely describing the motions of nature; the formulæ of mechanics potentially involve the description, but in themselves they are more than the description.

There is a deep significance in the remark that Agassiz is said to have made to the naturalists of America in his day: "You are too much *déscriptif*, too little *comparatif*." The element of comparison is at the basis of all scientific explanation; and scientific description, understood in its highest and in its lowest sense, always proceeds by comparison. When the savage saw a spirit in the magnet; when Newton likened the falling of the moon to the earth, to the phenomenon of the falling of a stone to the ground; when Pascal repeated with mercury in water the experiments which nature was daily making in the atmospheric ocean around him; when electrified bodies were conceived to be freighted with fluids which attracted and repelled each other; when the development of the fœtus was conceived as a repetition of the development of the race; in each case people regarded these phenomena as explained. For unfamiliar events, familiar events were substituted, which the imagination readily followed. The analogy, or resemblance at the basis of the explanation, will vary from the crudest and wildest of resemblances to such exact comparisons as the undulatory theory of light and electricity. But it is at bottom always comparison.

The terminology of colors and numbers even was originally based on comparison. But when colors and numbers acquired significance independently of any definite objects and any definite connexion, they were raised to the abstract plane; and explanations which involve such elements have been called *direct descriptions*,[1] on the ground of the fact that the comparisons involved in them have been shorn of all concreteness and etherialised to the point of suggesting no obscuring connotations whatever. The notion of function itself has passed through this process; it was geometrical with Leibnitz; algebraical with John Bernoulli; and has become a general and almost purely logical concept with recent thinkers.

And so we may conceive the instruments of mathematics itself as analogies and models, only of an ultimate and highly abstract order; quantitatively, the course of nature runs as the course of certain functions or mathematical analogies and models runs; and thus we can bring under one conception, the whole theory of scientific explanation. *Direct* description by absolute abstract analogy is the ideal; *indirect*, by more or less crude analogy, is most commonly the practice. The former has been best exemplified in Galileo, Newton, and the French physicists of the Revolution, culminating in the theory of Boscovic that matter, the ether, and the two electric "fluids" were sums of mathematical points acted on by forces which were functions of their distances; the latter in Faraday, Maxwell, and Lord Kelvin, who spoke in parables, dealt with so-called mechanical analogies and models and dynamical illustrations, and expressly disclaimed the reality of their fictions, but revealed withal a magnificent expanse of truth. Can this be said to be a reaction?

Professor Boltzmann[2] seems to think so. But the reaction will be found to be apparent only. The famous model from which Maxwell is said to have derived the equations which so touched the imagination of Hertz was itself the incorporation, or at least the

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[1] Mach, *Popular Scientific Lectures*, pp. 236 et seq.

[2] *Ueber die Methoden der theoretischen Physik*, in the *Katalog mathematischer und mathematisch-physikalischer Modelle, Apparate und Instrumente*, Munich, 1892.

suggestion, of those equations; and only in so far as it actually agreed in a formal aspect with reality was it of value to Maxwell. The *model* constituted the real discovery of Maxwell; if he had not hit upon the right model, he would not have hit upon the right equations; ultimately the crude model was abandoned, and the equations alone substituted for reality. A very rough diagram is a great help in solving a problem in geometry; but the roughness of the diagram is not the gist of the solution; the diagram merely helps to carry the thought and suggest the true relations; only in

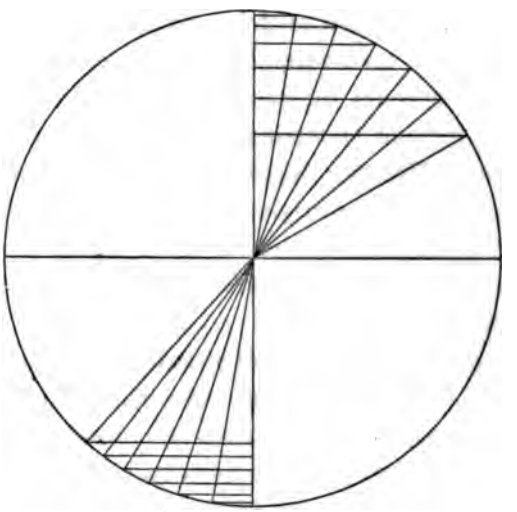

Fig. 5.

so far as the rough diagram typifies the true relations is it essential to the result.

We may very aptly illustrate this point by a comparison of Ptolemy's research on the law of refraction and the researches of Snell and Descartes. If Ptolemy, with his knowledge of the corresponding angles of incidence and refraction as exhibited in Fig. 1, had constructed a model of these varying angles, in which automatically moving strings represented the varying trigonometrical functions, as exhibited for one case in Fig. 5, he could on careful contemplation have scarcely omitted to observe the constancy of the relations between the lengths representing the sines of the two

angles. He might thus have been led ultimately to substituting for the measured lengths the numbers which he had calculated in his tables of chords, corresponding to our tables of sines, and so would have replaced his Table by a law for its construction, and have afterwards been able to dispense entirely with the rough model which had led him to his discovery. But it would have been the agreement of the model with reality that would have led him to his discovery, and not its crude or arbitrary character. The essential feature is the law which he would have deduced from the model, which may be characterised as the refinement of the model. And it is so with the mechanical models and dynamical illustrations of Maxwell. "I have used them," says Maxwell, "to assist the imagination, not to account for the phenomena." And again, "The author of this method [referring to Lord Kelvin's "Mechanical Representation of Electric, Magnetic, and Galvanic forces"] does not attempt to explain the origin of the observed forces by effects due to these strains in the elastic solid, but makes use of the mathematical analogies of the two problems *to assist the imagination* in the study of both."[1]

I trust that the conception of scientific explanation, or scientific law, which makes of it a *description* of Nature, has now been clarified. We observe that it involves no more than an elimination of the metaphysical elements from Science, economy and simplicity of the notions of Science, and the power of reconstructing Nature. But we saw that there was more involved in it than a bare *recital* of experience. It involved *prediction* of experience and *reconstruction* of experience. It included that additional something which Goethe had in mind when he said, "*Experience is only half of experience.*"

We have now reached the gist of our question. Let us carry ourselves back in thought to the discussions of Galileo's law and of the law of Snell and Descartes, and interweave them with the considerations which have just preceded.

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[1] Maxwell's *Scientific Papers*, Vol. I., pp. 452–453.

SCIENTIFIC SYSTEMS, MODELS, AND MACHINES.

All scientific systems, all so-called natural laws, are intellectual machines, mental working-models, or mental rules, for reproducing or reconstructing the course of Nature in the imagination. The system, or law, is substituted for Nature, it is studied in the place of Nature, and if it is a true system, a true law, the consequences of Nature can be spun off from it by sheer mechanical manipulation, as accurately and surely as wire can be spun from copper by the machines of a wire-mill. The history of astronomy affords the best example of this truth. All astronomical systems, the ancient systems of Eudoxus, Callipus, Cleanthes, and Ptolemy, no less than the modern system of Copernicus, are machines for mimicking and so reproducing for all past and future time in thought, the motions of the heavenly bodies.[1] They all did it more or less well; they were all more or less true; but none of them reached the simplicity, accuracy, and beauty, of the machinery invented by Copernicus. That machinery, with the improvements made by Kepler and Newton, has been transformed into a perfect imaginary working-model of the universe, and its study has, for the thousand and one purposes of philosophy and civilisation, been substituted for the study of that universe. Time and space have been annihilated by it. The necessity of new experience has been partly eliminated by it. The famous mathematician and astronomer, Sir William Rowan Hamilton, did not look through his telescope more than once or twice a year. He used to say, "That is my deputy's business. The stars move all night; but what interests me is the high *mathesis* that accounts for their movements."

EXPLANATION ITSELF A NATURAL PHENOMENON.

But how is this substitution of mere mental products for Nature possible? How is it possible by running the gamut of the odd numbers to foretell the spaces traversed by falling bodies; how possible by setting purely mental models a-going to mimic and

[1] See Adam Smith, *Essays on Philosophical Subjects*, London, A. Murray & Sons.

predict the course of Nature? Is Nature compelled to follow these so-called mental fictions? They do seem to exercise a constraint upon her. Nature is said to *obey* certain laws, as if these laws were beings outside of Nature and forced Nature to do their bidding. This question is the crux of the philosophy of science. Its solution has been rendered doubly difficult by our dualistic and animistic habits of language, which are the inheritance of a past reaching back to the days of savagery, and which have become bone of our bone and flesh of our flesh. I can only hint here at its solution.

Nature is as it is. It simply exists. There are no mysteries, no breaks, gaps, or disjunctions in Nature. Contradictions and inconsistencies are impossible in Nature; they are a synonym of non-existence, and exist only in the mind, which has not yet been able by the instruments at its command to mimic the actions of Nature, which has not yet adapted *its* formal mechanism to the actual mechanism of reality. To explain Nature, we have to cast about in the armory of the mind for that particular formal scheme which fits and covers the formal skeleton that is at the core of Nature; or, rather, eliminating personality, and viewing the matter objectively, the formal scheme of Nature, by its incessant action on the brain of man, *causes* the right and adequate mechanism of explanation to appear. It is an interaction between two integrant parts of Nature, not between something which is within and something which is without. The mind does not force Nature into a bed of Procrustes. It gives back to Nature merely what it takes from Nature. The mind and Nature are parts of one and the same whole, reciprocal reflexes, microcosm and macrocosm. In this view, explanation is itself a natural process, an interaction in the bosom of Nature herself, of the same kind as that interaction between undifferentiated protoplasm and rays of sunlight by which the organs of vision have been produced. In this view, dualism is eliminated, and the conformity of the mind, or so-called subjectivity, to the world, or so-called objectivity, appears as the natural conformity of two co-ordinate parts of the same consistent and orderly whole. Science takes its rise—and this is an important point—*as the forms of life have taken their rise, by the adaptation of*

the mind to its environment.[1] When the adaptation has been effected, we say a discovery has been made. We should say, the discovery has made itself.

Why the so-called creations of the brain, the working-models of events which we call scientific laws and scientific systems, run, in part of their extent at least, parallel to Nature, and may be substituted outright for Nature, is now becoming apparent. Nature, concentrated, abstracted, and abridged, is simply substituted for Nature. When we think that we are playing upon Nature, as we would upon an instrument, adapting her melodies to our scores, we are really playing an instrument (or, rather, that instrument is playing itself), which has been previously attuned by the labors of untold æons to the diapason of Nature's orchestra. The two vibrate sympathetically.

Contemplating thus the functions of purely formal thought, or the canons of logic and mathematics, in the explanation of Nature, and the marvellous power and comprehensiveness of these delicate intellectual engines, themselves the offspring of Nature, we are in some position to grasp the divine state of mind of Pythagoras, who, in discovering the parallelism of existence with the laws of number, believed that he had penetrated to the very core of Being. In some respects he had. The magnitude of his achievement has enshrouded his figure with a really divine halo. And with partial justice. Here was the beginning of an evolution which has culminated in the radiant crown of glory of modern science, and in these same realities as revealed by growing science, a modern philosophy has discerned the workings of an immanent Deity itself. We cannot wonder that as the inaugurator of this evolution tradition has credited the sage of Samos with the power of divine and occult communion with Nature. As our greatest poet has it:

> "There was not the smallest orb which he beheld
> But in its motion like an angel sang,
> Still quiring to the young-eyed cherubim."

Such harmony was in his immortal soul.

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[1] Mach, *Popular Scientific Lectures*, p. 214 et seq.

But times have changed. Through the magic wand of science, even to us "muddy vestures of decay," the harmony of the spheres has become audible music. By a long line of philosophers and scientists, beginning with the great Grecian Mystic, and continuing through Galileo, Kepler, and Newton, the "patines of bright gold" which moved the poetic heart of Shakespeare have been plucked from the "floor of heaven," and laid in all their brilliancy at our feet. This result even Pythagoras could not have foreseen.

THOMAS J. MCCORMACK.

LA SALLE, ILL.

THE PERSONALITY OF JESUS AND HIS HISTORICAL RELATION TO CHRISTIANITY.

THE NAZARENE.

PILATE, the Roman judge who condemned Jesus to die on the cross, called him briefly, "Jesus the Nazarene, king of the Jews," and we may regard the statement that Jesus was a Nazarene as historically correct. The disciples of the crucified Christ are also called Nazarenes in the Acts, and St. Paul is called the ringleader of the Nazarenes.

The name of the town, Nazareth, has nothing to do with the name of the sect, and the word Nazarene is a later corruption of the word Nazaree, being now used to designate members of the sect of the Nazarees in the days of Jesus.

The Nazarene sect presumably owed its origin to the attempt at resuscitating the ancient institution of the Nazarees, the latter being men who devoted their persons to Yahveh, led a simple life, as the fathers of the Israelites had done during their sojourn in the desert, renouncing all the comforts of civilisation and remaining as little touched by culture as possible. Hence, they did not cut their hair, did not drink wine, did not live in houses, made fire after the pre-historic fashion of the sons of the desert, took no heed of the morrow, and gave themselves up unreservedly to Yahveh. The ancient Nazaree was presumably a mere survival of the desert life of by-gone centuries; but he came to be looked upon as the representative of primitive vigor and piety. And a long time after the real Nazaree had died out, the ideal remained with the people; and among extremely pious Jews the practice was established of

making vows to live for a certain time, or for the remainder of their lives, after the Nazaree fashion. Such Nazarees were regarded with great awe by the people, and were deemed to represent the true type of the ancient unpolluted Israelite, national as well as religious. The revival of Nazareeism (alluded to in 1 Maccabees iii. 49), however, is no longer a continuation of pre-historic habits, but their artificial resuscitation, leading to an organised institution in which some of the archaic features were adhered to and others abandoned.

In the time of Christ the Nazarees (now called Nazarenes after the Latin form *Nazarenus*) formed whole congregations, but it seems that only their leaders, and they probably merely for a time, retired into the desert to live there after the fashion of the ancient Nazarees.

According to Josephus there were two ruling parties in Judæa, the Pharisees and the Sadducees, who constituted the aristocracy of the country, and naturally had a pre-eminently religious significance; the mass of the people, however, were as good as excluded from their ranks. By the side of the conservative Pharisees and the Hellenising Sadducees, sects arose, apparently of foreign growth, the members of which called themselves Ebionites or the Poor, Zabians, or Baptisers, and Essenes, a name of unknown significance. The ascetic tendencies of the latter are un-Jewish; their reverence for the light and the sun point to Parseeism; their condemnation of the oath and of slavery reminds one of Neo-Pythagorism, and yet they are older than the Neo-Pythagorean school, for we have evidences of their existence in the second century before Christ. Thus they may be regarded as an independent but parallel development of the tendencies which prevailed in the whole Roman Empire and produced such philosophies as Neo-Pythagorism and Neo-Platonism. The underlying theory in both Alexandrianism and Essenism appears to be an endeavor to get rid of all that is material and to come into close contact with God who is conceived as pure spirit.

The Nazarenes recruited themselves mainly from the lower walks of life, which is the reason that they are always found in

close affiliation with the sects. Wherever they lived in cities their main distinction seems to have been their adhesion to a socialistic communism, which in the Nazarene congregation in the days following the crucifixion of Christ was deemed so essential as to render the secret retention of any property the blackest crime, worthy of being punished by God with sudden death.

Eusebius quotes the authority of Hegesippus (*Eccles. History* II., 23, 3) that James, the brother of Christ, was a Nazarene for life. Jesus himself, though called a Nazarene and though the congregation of his disciples bear the same name after his death, was apparently not a strict observer of the Nazarene vows, for his enemies, presumably members of his own sect, called him a glutton and a wine-bibber. He lived in the desert for a while and may have taken the vows only for a time, but we know positively that he stood in a definite relation to the sect of Baptisers, or Zabians, with whom the Nazarenes frequently seem to have been associated.

We know that in the days of the early Christians there was a marked difference between the Gentile church of St. Paul and the Jewish congregation of Nazarenes led by St. Peter and James, the brother of Jesus; and the question presents itself: Which was the Christianity of Jesus? Was Jesus a Jew-Christian like the Nazarenes of Jerusalem, or a Gentile Christian like St. Paul? The accepted view, we may say at once, is that Jesus lived like the Nazarenes in perfect obedience to the law of Moses, presumably with the sole exception of keeping aloof (after the fashion of the Essenes) from the bloody sacrifices of the temple and cultivating the peculiar traditions of the Nazarenes, such as accepting baptism, breaking bread in communion, abstaining from taking an oath, living in voluntary poverty without private property, etc.; but while Jesus remained faithful to the laws and customs of his country, he is assumed to have cherished the Pauline view of a fulfilment of the law in the establishment of a cosmopolitan fraternity —the church, which should realise the ideal of peace upon earth among the men of good will.

We are apt to interpret the life of Jesus in the spirit in which the Church conceives the Christ-ideal, and thus our theologians ex-

plain the traditions recorded in the Gospels in the light of the dogmas of the Catholic Church as it existed in the beginning of the Christian era; but it is obvious that a historical investigation cannot accept this method, but must endeavor to understand the character and belief of Jesus as he really was, not as the Church wanted him to be.

THE HISTORICAL SOURCES.

The sources of our knowledge of Jesus are limited to the four Gospels; otherwise we have no reliable information whatever. There are a few scraps of unwritten sayings of Christ, the so-called Agrapha, which were quoted by Christian authors of the early Church from oral tradition, but they are doubtful and gain importance only indirectly as confirming or throwing light on, passages of the Gospels. In addition there are some passages in Flavius Josephus's writings on Christ, but they are interpolations which did not make their appearance before the ninth century. Jesus may in one respect rightly be regarded as a figure that is unknown to history. This is the view of a historian who has made a specialty of the history of the Old Testament and who at the same time is a good Christian. Professor Cornill says in his *History of the People of Israel*, speaking of the period of the life-time of Jesus:

"I assume that my esteemed readers are already aware of the fact that Abbot Dionysius Exiguus, who in the sixth century calculated the Christian era according to which we still universally reckon time, erred in the establishment of the year of Christ's birth, placing it several years, probably five, if not seven, too late. It is positively certain that Herod died in the year 4 before our era; if, therefore, Jesus was born during his reign—and there is no reason for doubting this tradition—the conclusion is unavoidable that the date commonly assigned for the birth of Christ is wrong. The place of Jesus's birth is just as much a matter of uncertainty as the time; and so is the year of his death,—in this latter point reports and estimates vary a matter of seven years, from 29 to 36 A. D.

"It is downright providential that we know so little from the historical and biographical point of view concerning this greatest life that was ever lived on earth. Thus every possibility is to be precluded of our falling into the delusion that we know him in knowing the date of his birth and of his death and the outward circumstances of his life; he is to stand before us simply in his work.

"The life and activity of Jesus fell into the period of Jewish history which is

to occupy our attention in this chapter, and his activity was possible only on the soil of Israel and among the Jewish people; but yet a history of the people of Israel is not the place in which to speak of him. He swept across the hopelessly darkened sky of Israel like a meteor, flashing and vanishing; he had no effect upon the history of the Jewish people, and the fact that he did not do this, that he deliberately refused to do so, became, humanly speaking, his doom. His people and his time demanded a Messiah with the sword of Gideon, one who would break the dominion of Rome and re-establish the ardently longed-for kingdom of Israel. Jesus regarded it as his mission to break the power of sin and to establish the Kingdom of God, which is not accomplished with the sword of outward power but through the inward regeneration of the spirit. In the invincible faith that this Kingdom of God would and must come, Jesus went to his death. But on his way to death he had for his people only this affecting farewell: 'Daughters of Jerusalem, weep not for me, but weep for yourselves and for your children.'" (Luke xxiii. 28.)

Although Jesus left no direct impression on the national history of his people, he is after all an historical figure and that of the highest importance, by the indirect influence which he exercised upon the world; and had he done nothing else than to impart to Stephen the joyousness of dying a martyr's death and thus indirectly to stir the soul of Paul, who witnessed the scene, and to cause him to break down on the way to Damascus under the long suppressed accusations of his conscience, it would have been sufficient to render his life and death of the highest historical significance. But we must approach the problem not from the standpoint of a believer but of a doubter or even of an unbeliever, and it seems to me that in spite of all the unhistorical elements in the Gospels we cannot help coming to the conclusion that the main facts narrated therein, leaving aside all later accretions, possess all the symptoms of probability, on external as well as internal evidences.

The Gospels contain many narratives which, if told of Zarathustra, or Mohammed, or Buddha, would be deemed incredible by any sober-minded Christian; but for that reason Jesus need not have been a mere invention of his followers.

The Gospel accounts, as they stand now, are on their own authority not older than the post-apostolic period, which begins with the destruction of Jerusalem in the year 70. St. Paul makes no mention of them; Hermas appears to be acquainted with such ac-

counts as are contained in Mark. Papias, born not before 60 and not later than 90 A. D. (of whom we know much through Eusebius), refers to documents which contained the words of Jesus and which may have been the often quoted speeches (λόγια) of the Lord. According to Justinus Martyr, who died between 163 and 167 (Apologia, I., 67), the reminiscences (ἀπομνημονεύματα) of the apostles were read on Sunday in the Christian congregations together with passages from the prophets, while Christ as a matter of course was referred to as the highest authority. These early books did not possess any authority of their own on account of their apostolic authorship; they were not believed to be inspired by the Holy Ghost, and the canon of the early thinkers was still limited to the Old Testament. Any one felt at liberty to alter the text according to his notions of the truth. They were not as yet deemed canonical. Thus Justinus Martyr, when relating the story of his own conversion in his dialogue with Trypho, tells us how a venerable old Jew-Christian had convinced him of the truth by quoting scriptures, which, however, are passages from the Prophets, not from those writings which formed the first germ of the New Testament literature. According to Justin's idea, the Prophets contain all that is necessary to be known about Christ, and he recognises no other authority except the revelation of St. John which is regarded as a continuation of prophecy and is adduced to prove the doctrine of a millennium upon earth. Other quotations of the speeches of the Lord are made by Polycarp (7, 1), Irenæus (I., Preface), and Ptolomæus (Epiph. Haer. 33, 3), who in quoting authority speaks of "the law, the prophets, and the Lord" (ὁ νόμος, καὶ οἱ προφῆται, καὶ ὁ κύριος). Whatever may have been the date of the origin of the Gospels which we possess now, this much is sure, that Mark has, in the furnace of the most rigorous critique, been proved to be the most historical and original of them. In Matthew, Luke, and John, a dogmatic programme dominates the narration. Mark alone is a pure historian, and the picture of his Jesus is, with all its legendary ornamentation, quite realistic. Matthew represents the Judaistic Christianity, Luke the Pauline party of Gentile Christianity, and John the Christianised Neo-Platonic Gnosis of Philo.

The solution of the Gospel problem is the combined work of several theological schools, and the result of the labor of several generations has been condensed by H. J. Holtzmann, Doctor of Theology and Professor of New Testament exegesis at the University of Strassburg. We quote from the *Hand-Commentar zum Neuen Testament*, Vol. I., p. 7, the following *résumé*, which gives a concise outline of the situation. Holtzmann says:[1]

"While Matthew and Luke in sketching their hero fit him into the frame of his Messianic mission and work, as previously conceived; and while accordingly in both Gospels we meet with a dogmatic programme that is superadded to descriptions of a series of events in the life of Jesus, all such suggestions are missing in Mark. The mysterious prelude of the birth-history, the elaboration of which the apostolic age left to the following generation, is entirely missing. The hero of the Gospel story is simply introduced as Jesus of Nazareth, thus called in contradistinction to many other bearers of the same name, for from the time of Herod the Great until the destruction of Jerusalem mention is made of eleven other persons who were called Jesus,—priests, leaders of factions, robbers, and farmers. This Jesus of Nazareth (Mark i. 9) appears to have grown out of the natural conditions of the soil of Galilee. His mother, brothers, and sisters are all well known (Mark vi. 3); his father, Joseph, alone is not mentioned, probably on account of his early death, from which we also must explain the fact that in the early history of Christianity he is crowded into the background. In his place Jesus is himself considered as the carpenter, who, however, at the beginning of our account (chap. i. 9) repairs to the Jordan where at once, when John the Baptist was put in prison, instead of continuing his former occupation, he follows the vocation of a public teacher. The theme of his public proclamations which now begin shows a progress which is demonstrable in the description of Mark. The first sermon of Jesus (Mark i. 15) which is repeated by his disciples, vi. 12, was the same as that of the Baptist who partakes of the same prophetic character as Jesus, for both announce that the portentous time is near at hand in which the empires of this world shall give way to the establishment of the Kingdom of God. Jesus wants to bring home to the hearts of men that this message conveys an earnest exhortation to all, and that it should impress with joy the children of God. Accordingly, while in Matthew the very first proclamation of Jesus (the Sermon on the Mount) announces the personality of the new legislator in his full importance, the preaching of Jesus in Mark centers not so much in his personality as in his work. Jesus speaks alone of the moral conditions, deemed necessary for entering his congregation and joining the Kingdom of God. He does not begin by proclaiming himself as the master and king of

[1] Translated from the German.

the Kingdom of God, but by exhorting the people to found the Kingdom of God by their own exertions and labor, and to prove himself its first and most perfect citizen.

"From the fulness of his conviction concerning the magnitude of the work which is to be accomplished, the power of self-consciousness grows more and more in Jesus, who knows himself and himself alone to be entrusted with this mission. Here the intermediate phase between the first and the second form of Jesus's sermon is the time when the original call, 'The Kingdom of God is near at hand,' changes into the idea that is presupposed in the chapter containing the parables, the signification of which is, 'the Kingdom is here.' If the Kingdom is here, its founder and master must be here also; the circle being drawn, its center is given too, and Jesus's development finds its consummation in his Messianic kingly self-consciousness expressed in the words, 'I am,' in Chap. xiv. 62, which seals his fate. Jesus's proclamation could not from the beginning have a Messianic tendency, and the Second Gospel actually shows a slow but steady progress which finally leads to the unfurling of the Messianic banner. Here the disciples are by no means the first to recognise in Jesus the Son of God, that is, the Messiah. This event is attributed first to the demons (Mark i. 24, 35; v. 7) upon whom the presence of Jesus makes an extraordinary impression. They are commanded to be quiet. Also when they proclaimed him in the presence of a great multitude as the Messiah (Mark iii. 11–12), the same motive is apparent on various occasions in the repeated requests of Jesus not to speak publicly of his deeds.

"Now there are several passages in the Second Gospel which possess parallels in the First. There is Mark v. 43; vii. 36; viii. 26=Matthew ix. 26, 30, 33. Twice in Matthew the command not to speak publicly of Jesus as the Messiah is omitted. The command no longer has sense in Matthew, for here Jesus appears as Messiah from the beginning of his career, and is proclaimed as such by the voice at his baptism: 'This is my son'; while the other two evangelists read 'Thou art,' which is originally an inner voice addressed to and heard by Jesus alone. These omissions alone indicate the dependence of Matthew on Mark. Still more, however, this appears in the fact that Matthew allows the command of Jesus to stand in the third case (Mark viii. 26 = Matthew ix. 30), where he is not conscious of the necessity of omitting it in order to be consistent with his change of presentation.

"The same becomes more obvious still in Matthew viii. 4, where Matthew leaves the command of Jesus that appears in Mark i. 44, without considering that since, according to the described scenery as given in Matthew viii. 1, the multitudes who have just listened to the sermons on the Mount are still present, this command has become preposterous.

"According to Mark i. 43, Jesus had called the leper into the house and spoken with him privately. Still more obvious it becomes when shortly before the selection of the apostles, Mark (iii. 10–12) makes the remark that Jesus healed many and always forbade the demons to promulgate his Sonship of God and his Mes-

sianic mission. This is in Matthew (xii. 15–16) abbreviated thus: 'That great multitudes followed him and he healed them all and charged them that they should not make him known.' Here, accordingly, Matthew has retained one sentence of his original, but in the interest of an abbreviation gave it an incorrect interpretation, in consequence of which his report becomes actually unintelligible.

"Further, even the exceptions which Jesus makes in his command not to speak of his Messianic work and dignity are to the purpose in Mark. The man of Gadarene is the first person who is allowed to speak of his being healed by Jesus in his Pagan home (Mark v. 1, 19–20). Moreover, Jesus's habit of keeping his activity secret could not be continued for any length of time, because he repeatedly healed in the presence of witnesses. Thus we find the omission of the command in Chapters ii. 11–12; iii. 5; v. 34; vi. 56; ix. 27; x. 52. In this way Jesus began to be known and people commenced to think seriously about him and his work, while before they had remained without an explanation as to the manner of his mission. (Mark i. 27; iv. 41; vi. 2–3.) Some misrepresent him maliciously (iii. 21–22). Others regard him as a genuine prophet (vi. 14–15; viii. 28). Jesus himself, however, went so far as to indicate his Messianity in the mysterious expression 'Son of Man,' which latter, however, in the passages Mark ii. 10, 28, may have slipped in by anticipation. If they are mere anticipations, Jesus never called himself the 'Son of Man' in the full Messianic sense of the term before the great moment mentioned in Mark viii. 31, but afterwards did so always. Even the disciples sent out by him (Mark vi. 7, 12–13) were not requested to announce him as the Messiah, but only to proclaim the Kingdom of God, to exhort the people to repentance, and to heal the sick. At last the comprehension of the significance of Jesus is matured in Peter when he says 'Thou art the Christ' (viii. 29) and this Jesus had not as yet been for any one of the parties of the people, as can be gathered from the other answers mentioned in viii. 28. Here the development of Jesus reaches the climax of his Messianic self-consciousness when he answers St. Peter affirmatively, saying 'I am.'

"But even now the disciples are not according to Mark allowed to make known to the people their master's Messianic dignity (viii. 30) and celestial glory (ix. 9). Jesus alone speaks more freely and openly to the people (viii. 32) while he instructs his disciples that the 'Son of Man' must suffer many things, an idea which he had only touched upon formerly (ii. 20). He now discusses it at length (viii 31, 33, 34; ix. 9, 13, 31; x. 32–34, 38, 39, 45), but the secret can no longer remain a secret. The cause of Jesus is ripe for decision. Returning from the extremest North, whither his conflicts with the Pharisees had pushed him, he quickly wanders through Galilee, and reaching Jericho is at once greeted as Messiah (x. 46–48) Now he drops all considerations.

"This, in fact, is a well-arranged and consistent presentation of the nucleus of the story of the Gospel, which is obliterated in Matthew by relating incidents in which Jesus is recognised as Messiah, now by the blind and the sick is greeted as

the Son of David (ix. 27; xv. 22; compare xii. 23), and now is directly called the 'Son of God' by the disciples themselves (xiv. 23). While, however, Jesus according to Mark commands the demons to keep silence concerning his Messianity, according to Matthew (vii. 29) he does not repeal this unwelcome testimony, but on the contrary appears in the very beginning, when preaching the sermons on the Mount (vi. 21–23), as the master and judge (see also x. 22–23; xi. 25–27). If in this way the disciples had recognised Jesus as the Son of God, there was no special divine revelation necessary in order to open the eyes of Peter (Matt. xvi. 17) and he at least should not have been the first to have made such a discovery. Peter's words, accordingly, are in the right place only in Mark viii. 29, and Luke ix. 20.

Nor is it probable that Jesus for any length of time should have appeared before the people as a declared Messiah. The Roman police who always had a keen eye for Messianic movements, and without much inquiry into their nature and motive, exterminated them, would not long have suffered in Judæa a man who, calling himself the Son of David and King of Israel, received the homage of a great part of the people, even though the latter might for his own person have been thoroughly convinced of the non-political and purely religious character of his mission. That Jesus should for years have journeyed about and preached as Messiah can only be accepted by those who believe without feeling the need of a scientific comprehension and an historical orientation."

Dr. E. A. Abbott (in the *Encycl. Brit.*, *s. v. Gospels*) presents in a very striking form the argument of theological scholarship in favor of the so-called Mark hypothesis. He shows that the character of the older account (which may fitly be called the older Mark) can still be ascertained when we take a copy of our Mark and strike out all the words not contained in Matthew and Luke. What remains is a fairly well connected account which may be regarded as the oldest historical record of the life of Jesus.[1]

Dr. Abbott condenses the result briefly thus:

"To sum up the contents of the common tradition, it omits the genealogies miraculous incarnation, and the picturesque details of the infancy; it lays emphasis on the relations between John the Baptist and Jesus; it contains none of the parables except the sower, the mustard seed, and the wicked husbandman, and few of the long discourses of Jesus, except an abridged prediction of the second coming. The disputes between Jesus and the Pharisees about the Sabbath, about fasting, about exorcism, about the baptism of John, and the tribute, and Christ the Son of David, and the dialogue with the Sadducees about the resurrection, are very fully given; and so also is the dialogue with the rich young man. Indeed it is a collec-

[1] For details see *Encycl. Brit.*, Vol. X., p. 793 et seq.

tion of dialogues and anecdotes rather than a set treatise of doctrine or biography. The sayings of Jesus recorded in it are short, pithy and abrupt,[1] and many of them are polemical. Only now and then do we find a sentence which goes down deep below all polemics, and reveals a deep-laid spiritual plan. But putting such sentences together we perceive that the Triple Tradition describes a prophet wholly different from any that had before appeared in Israel; a prophet who not only (like Isaiah) protested against sabbaths and purifications as ends in themselves, but who also preached the Fatherhood of God in a manner entirely peculiar to Himself, and who set aside the Mosaic law of divorce (Mark x. 2–11). He also instructed His disciples to enter into the kingdom as little children (x. 15), and seems to have attached a certain symbolic mystery to childhood as representing Himself (ix. 37). He taught His disciples further to devote their lives to Him, and to ignore all life apart from Him (viii. 34), ('to confess Christ, to deny themselves'). From the first He claims the power of forgiving sins (ii. 7); and, as soon as one of His disciples confessed Him to be the Messiah, He prepared for death, predicting that He should die, but rise again. Then, after prophesying the fall of the temple, and great distress in all nations, He predicted a final triumph for His disciples; and after bequeathing Himself, His body and His blood, as at a funeral feast,[2] as His final legacy to His disciples, He was arrested and put to death."

The original source of the synoptic Gospels possesses the peculiarity of unmistakably exhibiting traces of oral tradition. We may assume that there have been told in the circle of his followers sayings of the Lord which were deemed as the highest authority in matters of belief. St. Paul knows of such words and quotes them. Professor Holtzmann says (pp. 15–16):

"We see in this point clearly into the formation of tradition. In the 'words of the Lord,' which were carefully treasured, the congregation possessed a kind of fundamental law, a highest authority, and a final appeal. Memorable speeches of Jesus were the first things which were propagated; dicta of proverb-like conciseness, of striking expression, of popular clearness, such as are presented like pearls on a string in the Sermon on the Mount: 'Blessed are the pure in heart'; 'You are the salt of the earth'; 'Your speech be yea, yea; nay, nay!' Any one who has heard sentences like these, if only once, will remember them forever. To the same category belong also the perspicuous crystal-like parables that are contained in the Gospels in great numbers. They are inexhaustible mines of the purest notions of God and world, inimitable in their simplicity as well as artless dignity of con-

[1] *Cf.* Justin, *Apol. I*, (Kirchhofer, p. 89), *βραχεῖς τε καὶ σύντομοι παρ αὐτοῦ λόγοι γεγόνασι.*

[2] That the institution of the Lord's Supper must be given up as unhistorical has been set forth in *The Monist*, Vol. X., No. 3, pp. 375–376.

ception, and full of an inspiration which forever secures them a position at the head of all the memorials that mark the path of mankind's ascent towards its divine goal. Nor must we overlook, although here tradition begins to become uncertain, those grand prophecies which gave wings to the imagination of the first congregation and engaged the attention of all subsequent ages. They are suggestions uttered from time to time by Jesus, and collected in his farewell addresses to his congregation; they rose from his presentiment of approaching catastrophes both in the world at large and in his own life, and from the confidence that his work would survive death and the grave."

In order to gain a correct idea of the personality of the historical Jesus, we must limit our attention to those of his sentences in the Gospels which still show the marks of an originally oral tradition. They may be supposed to be genuine sayings of Christ which were collected in the Speeches of the Lord and the Reminiscences of the Apostles. Holtzmann says (p. 15):

"The manner in which these 'Words of the Lord' were preserved indicates plainly the method of oral tradition. Sometimes the similarity of the contents conditions their connexion, as for instance, in both sentences on the Sabbath (Mark ii. 23–26 = Matt. i. 40 = Luke vi. 1–11). Sometimes the mere similarity of the sound of the words suffices to connect them. Or even only a haphazard relation which the ideas preserve in the memory determines the succession of sentences. Only through the simile of the shining light is Luke xi. 33, the exhortation of making the right use of our talents for the benefit of others (in Luke xi. 34–36), connected with the sentence saying that it is important for the whole life of a man that the determinative center of his being should be full of light. In the same way the idea of making light and lighting up the darkness connects the sentences of Luke viii. 16, in which Jesus speaks of lighting a candle and setting it on a candle-stick forms the connexion with Luke viii. 17, in which the general use of light in darkness is mentioned, stating that 'anything hid shall be known and go abroad.' Oral tradition alone arranges thoughts after such view points and external motives, and it is this method that was apparently employed when the materials of the Gospels were first written down."

These sentences, accordingly, contain that which for technical reasons may be regarded as the best accredited of the sayings of Jesus and they allow us to form a fair idea of his extraordinary personality. The main argument that can be offered for the genuineness of a great part of the Gospels, is, it seems to me, the Nazarene world-conception reflected in many sayings of Jesus. They

are retained in spite of being contradictory to the main tenets of the Gentile Church; and these sayings must, with greatest plausability, be considered as genuine because they would not have been invented, and being recorded in unquestionably genuine traditions were only tolerated. In addition, the eschatological belief of Jesus is expressed in a prophecy which is very definite and had at an early date passed beyond all hope of fulfilment. Jesus says:

"Verily I say unto you, that there be some of them that stand here, which shall not taste of death, till they have seen the kingdom of God come with power."[1]

This passage is positive evidence of the fact that some portions of the Gospels date back to the generation that lived in the days of Jesus and were still expecting to see the day of the Lord. It is a belief which St. Paul cherished as a direct revelation of the Lord and which constituted the main tenet of early Christianity.

Whatever may be said in favor of the theories which regard the Gospels as products of a myth-making (*Mythenbildung*, as it has been called) belonging to a later age, we cannot help reverting to the old conception for the reason that later myth-writers would have written a Gospel that taught the peculiar doctrines of Gentile Christianity and would never have invented sayings of Christ contrary to their own beliefs. The very remarks of the writers with which they accompany their reports, being touches that are intended to palliate and soften the harshness of the tradition, are still further evidences of the genuineness of the source from which the information comes.

The subject is of sufficient importance to enter into details.

CHARACTERISTIC POINTS IN THE RELIGION OF JESUS.

Jesus, like all Nazarenes, believed in communism as the highest social order. When asked, "What good thing shall I do that I may have eternal life?" he said:

"Keep the commandments," and, "If thou wilt be perfect, go and sell that thou hast and give it to the poor, and thou shalt have treasure in heaven."

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[1] The prophecy is repeated by Matthew xvi. 28, and Luke ix. 27.

When the man who asked this question went away sorrowful, St. Matthew continues (Matt. xix. 23–24):

"Then Jesus said unto his disciples, 'Verily, I say unto you that a rich man shall hardly enter into the kingdom of heaven.

"And again I say unto you, it is easier for a camel to go through the eye of a needle, than for a rich man to enter into the kingdom of God.'"

Whatever interpretation may be given to this passage, we perceive clearly that Jesus himself and his disciples acted accordingly. The main condition of discipleship as of membership in the early church of Jerusalem consisted in the surrender of all worldly possessions.

The Ebionites (the sect of "the Poor") looked upon wealth as an evil and poverty as a blessing, and we learn from the story of Dives that Jesus represents the other world not as a punishment for evil-doing and a reward of the good, but merely as an inversion of the present condition of things. Abraham explains to Dives in Hell the doctrine of the life to come as follows:

"Son, remember that thou in thy lifetime receivedst thy good things, and likewise Lazarus evil things: but now he is comforted, and thou art tormented."

Other writings of the New Testament contain passages of the same purport. We read in the Epistle of St. James (v. 1–3):

"Go to now, ye rich men, weep and howl for your miseries that shall come upon you.

"Your riches are corrupted, and your garments are moth-eaten.

"Your gold and silver is cankered; and the rust of them shall be a witness against you, and shall eat your flesh as it were fire. Ye have heaped treasures together for the last days."

The current interpretation changes the significance of the words that "one jot or one tittle shall in no wise pass from the law," into its contrary, that the letter of the law shall pass away and its spirit only be fulfilled.[1] Jesus incidentally called the Gen-

[1] The difficulty of this passage is not overcome by explaining it in the light of St. Paul's theory that "Christ is the fulfilment of the law" (*τέλος γὰρ νόμου χριστός*, Rom. x. 4); for it is Christ himself who here insists, not on the preservation of the letter of the law only, but even of every jot and tittle, viz., the very iota and stroke

tiles "dogs" (Mark vii. 27), the usual name which the Jews gave them, and he stated expressly that he was "not sent but unto the lost sheep of the house of Israel." (Matt. xv. 24.) Jesus helps the Gentile woman, but merely on account of her extraordinary faith, not in anticipation of the great scope which after his crucifixion his saving power is intended to acquire. There is not the slightest allusion to such a prospect in any one of the sayings of Jesus that can lay unequivocal claim to genuineness.

Jesus sends out the twelve Apostles to the lost sheep of the house of Israel and believes that the coming of the Son of Man (which is identical with the expected regeneration of the world) is so near at hand that they shall scarcely have time to finish their missionary trip through the cities of that little country. He says (Matt. x. 5, 6, 23):

"Go not into the way of the Gentiles, and into any city of the Samaritans enter ye not:

"But go rather to the lost sheep of the house of Israel.

"Verily I say unto you, ye shall not have gone over the cities of Israel till the son of man be come."

This cannot mean the first coming of the Son of Man in Jesus, for Jesus is present and gives the command himself.

One significant feature of the new world-order was the spirituality of man, which was attained by a conquest of the sensual nature. Chastity was no less a condition of attaining life eternal than poverty; and thus Jesus enjoins strict celibacy, saying (Luke xx. 34–35):

"The children of this world marry and are given in marriage; but they which shall be accounted worthy to obtain that world, and the resurrection from the dead, neither marry nor are given in marriage."

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of it, and this shall be "till heaven and earth pass." The same doctrine of the eternity of the law is pronounced by Jews. The limitation, "till all be fulfilled," appears like a modification of the "verily" which is added to conceal the contradiction in which this sentence stands to the text of the Sermon on the Mount, usually interpreted. If we understand the words to mean what they say, Jesus would have his followers keep the Mosaic law punctiliously in its letter as well as in its spirit. Accordingly he would reject the Pauline doctrine of freedom and insist on circumcision as indispensable.

Jesus speaks approvingly of destroying the cause of sexuality, saying (Matt. xix. 12):

"For there are some eunuchs, which were so born from their mother's womb; and there are some eunuchs, which were made eunuchs of men; and there be eunuchs which have made themselves eunuchs for the kingdom of heaven's sake. He that is able to receive it let him receive it."

We do not say that the passage was actually understood in its literal sense, but this much is sure that the mere idea of resorting to such allegories is an unmistakable evidence of moral views which are only in part preserved by the Roman Catholic Church and have been abandoned for good by the Protestants.

The mere idea of an eunuch is an abomination, not only to the Gentiles, but also to the Jews, so much so that even he who accidentally lost his manhood was according to Old Testament law forbidden to enter into the congregation of the Lord (see Deut. xxiii. 1). Nevertheless, the ideal of absolute chastity was carried so far among the early Christians that so prominent a man as Origen deemed it necessary to become an eunuch for the kingdom of heaven's sake.

Jesus apparently was a Jew in his religion, sharing with his contemporaries the national narrowness, but he had imbibed the spirit of the age which otherwise manifested itself in the religious fermentation of the Gnostic movement that preceded Christianity and made level the paths of the new religion that was destined to conquer the world. His education was probably limited, which may have been the reason why he did not shrink from using the most violent names, such as "ye serpents, ye generation of vipers," and it is not improbable that he shared with his compatriots, the inhabitants of Galilee, the belief in demons as well as the method of curing diseases by exorcism. He was baptised by St. John, the leader of the Zabian sect. Being a Nazarene, he may also have kept in touch with the Essenes and Ebionites. As a preacher and a prophet he was respected among the people so much that at Jerusalem enthusiasts (probably of the Nazarene settlement there) greeted him on his arrival with shouts of hosanna.

JESUS, THE MAN, AND HIS METHOD OF TEACHING.

The question has been asked, how did Jesus earn his living, and we know that for a time at least he continued his father's trade as a carpenter; but it seems that, after having chosen the religious calling of preacher and healer, he lived on the voluntary gifts of those believers who entertained him in their houses or called upon his assistance for curing their sick. Judging from the injunction given to his disciples, he accepted the hospitality of his followers, but no money, not silver and not gold; but according to the Gospel of St. John, he kept a common purse with his disciples, and Judas Iscariot acted as treasurer.

But all these things are the externalities only of Jesus; they do not constitute the core of his being, his personality, and would be insufficient to explain the prominent part he played in history. Jesus was a man of the people, with a heart for the people, and an unusual oratorical power over the people.

Jesus was a devout man, but not a theologian. His religion is not the product of school doctrines. He who would try to explain his appearance as a combination of the conflicting theologies of his time will miss the most characteristic feature of his life. Jesus apparently nourished his soul at a well of living waters and did not draw his inspiration from books. Thus nature is mirrored in crystal-clear reflexion in his speeches. His imagination does not suffer from Oriental exaggeration. His mind is not distorted by Rabbinical wit or subtleties, and there can be no question that he is a child of Galilee, of the country which is described as a continuous garden where palms and figs and flowers grow. If he had grown up in a city like Jerusalem he would not have introduced similes and invented parables of provincial life as he did. His native country is the background of all his speeches, and only a Galileean could expect to find figs at Easter-time in Jerusalem. There is nothing gloomy in his views of nature. He speaks of God's sun and its radiance, of the birds under the sky, and the flowers in the

fields, of the rain that pours down on the just and the unjust. Any one who uses such language is not in danger of having the theologian stifling the man in him.[1]

The life of nature apparently made a deep impression upon Jesus, but he concentrated his attention even more upon the life of man; and here again we find the social conditions of Galilee, not the city-life of Jerusalem, nor views which might be uttered in the schoolroom. Jesus was familiar with the joys and sufferings of the country and the people, and thus he was enabled to voice the deepest religious sentiments. God was to him like the father of a family, and there are many pictures of family life in his parables. He speaks of the children sitting round the table with their parents, the dogs waiting for the crumbs that are thrown down to them, and when it is dark, of the light that is put on a candlestick, which gives light to all that are in the house. Neighbors and friends are mentioned who are invited on festive occasions (Luke xv. 69). The children sleep in the chamber together with their father (Luke xi. 7); and children are mentioned as being nearest and dearest to his heart.

By the side of these friendly pictures of family life Jesus also mentions the oppressive social conditions of the laborers, servants, or slaves, and of the hired workmen in the vineyards. He frequently mentions the good man of the house who is the head slave, the overseer of the other servants, either proving himself to be reliable or being a tyrant oppressing his companions. The slave girls are alluded to who work the hand-mill and who must sleep two in a bed. All of them are subject to the cruel laws of the times and depend upon the will of their master. When they have tired themselves in the fields, they are still kept busy in the house (Luke xvii. 7–9). They serve at table, and it is a distinction if they are entrusted by their master with money affairs. Jesus repeatedly introduces the master of the house in his attitude of going over their accounts and computing the returns of the entrusted money. When

[1] In this character sketch of Jesus the author follows the authority of Holtzmann.

the master travels, the servants wait for his return and remain awake into the night.

But the hardships of slavery, which are introduced without further reflexion in the sermons of Jesus, are not the worst features of the social conditions of those days. The greatest misery is represented in the cripples and the beggars on the streets, the tramps on the highroads, the thieves in the cities, the robbers in the woods, the malefactors who carry their own cross, imprisoned debtors, etc. We learn of the transactions of usury, bills of indebtedness, the severity of creditors, the contentions between parties on the way to the judge, punishments by the court, etc., etc.

Yet while Jesus describes scenes from life such as he must have witnessed in his childhood and early youth, he was at the same time not unfamiliar with the Scriptures. His speeches show a special familiarity with Deutero-Isaiah and also several of the Apocryphal and Apocalyptic writings. In Luke xi. 49 he quotes from a Book of Wisdom which is no longer extant, and there are passages in Matthew and Luke which contain echoes of Jesus Sirach.

Jesus must have learned reading and writing, for we are informed that he read chapters from the Prophets in the synagogue and addressed the Pharisees repeatedly with the words: "Have you not read?" He quotes from the history of his people and is full of Biblical reminiscences. It is true that he makes mistakes in his exegesis, but he proves himself a genuine prophet by the freedom with which he introduces his interpretations. The Scriptures are to him only incidental and accessory corroborations of the religious experiences which he had had himself, and thus he shows an assurance and superiority, which, although he never places himself above the Scriptures, makes it possible for him to speak with authority. The Scriptures are to him like a glass in which he sees his own face and behind it the face of God.

The influence of Essenism on Jesus has been a matter of dispute. His condemnation of the oath, his celibacy, and the communism involved in the idea of the surrender of property, the redundancy of temple service and bloody sacrifices, indicate some

connexion between Jesus and Essenism; but Holtzmann is inclined to regard these coincidences as being due to the moral ideals of the times, for Jesus was very different from the Essenes, since he did not place his light under a bushel as they did in their retirement. They represented a separatistic sect, while he lived in the world and communicated with all the people, scribes and Pharisees, publicans and sinners.

The Pharisees were apparently the party with which Jesus was most closely connected in the beginning of his career. He appears as a guest in the synagogues. He knows their methods of teaching, he uses their modes of argument and proves his case on the authority of Scriptures, in exactly the same style which they were wont to use. He discusses problems such as that proposed to Hillel, Which is the first and the greatest commandment? (Mark xii. 28; Matt. xxii. 36.) He introduces the term "righteousness" as frequently as did the Pharisees, only that he deepened the meaning of the word. It is still the dominant theme in the Sermon on the Mount. Where he combats the Pharisees, he does so with their own weapons. He discusses the worth of almsgiving and the reward in heaven. He agrees with the Pharisees on the doctrine of resurrection as against the Sadducees, and it is not mere chance that Paul the great apostle who completed the mission of Jesus came also from the school of the Pharisees.

But the main difference between Jesus and the Pharisees is his more natural and more human conception of the righteousness of the law. In his explanation of the law, his own genius asserts itself. Imbued with the experiences of real life he applies his religious views to the conditions that surround him, and is free from all scholasticism and scholarly prejudices. He is not a professional scribe but a self-taught man who bears the prototype of his religious ideas in himself, and this gives him a self-reliance which cannot be acquired by book-learning. His belief in God is not born in the storms of despair, but it appears like sunshine upon the quiet sea of Galilee.

Considering the character of Jesus, such as is here described, it is natural that he possesses no special method of teaching. He

does not use the abstract definitions of the schools. He shows no doctrinary reflexion, nor any dogmatic system. He is a man of the people and not, like St. Paul and St. John, a theologian. He never cares to solve problems of science. He even neglects the order and consistency of his thoughts. He is always bent on solving practical questions which he does by his faith in a world of religious sentiment. He never strives for lucidity, but always for a popularly impressive expression of his thoughts which are communicated as directly as possible. We must understand every single word from the motives which prompt it, and in order to judge of his personality we ought first to be able to translate his speeches back into Aramaic, for they have suffered greatly by being transcribed into a Greek garment. This is a work which has only recently been begun, but has not as yet been completed.

The originality of Jesus appears mainly in his application of religion to practical life. As his views of nature and of man are taken directly from life, so he applies them directly to the needs which he sees about them. He is more a child of nature than the theologians of later centuries would have it.

While Jesus has a deep reverence for the sacred traditions of his nation, and while he is willing to fulfil the law, he sees no need of obeying all the various ordinances which the Pharisees and scribes enjoin on the people. The law as it was understood in Jesus's time was a heavy burden upon the people. It presupposed a study, for who could know all the rules about prayer, about washings, about the tithes, sacrifices, and ceremonials? The law of the Jews had become a religion for the rich. It was utterly impracticable for poor people. The parents of Jesus themselves were unable to comply with all the demands of the law, for we know that they travelled only once to Jerusalem, a journey which, according to the law, had to be made three times a year by a good Jew. We have the express statement that Jesus himself did not observe the fasts and that he did not hesitate to break the Sabbath. The mass of the people lived in utter ignorance of the details of the law, and considering the burden of the law, we can now appreciate that Jesus praises the unlearned and uneducated by saying "Blessed

are the poor in spirit." He comes with a Gospel for the poor. He addresses not the pious Jews, but the sinners, those who by the pressure of circumstances no longer continued to observe the law and formed a class by themselves upon whom the orthodox Pharisee looked down with contempt. The parents of Jesus themselves probably sat down to dinner without washing their hands according to the Levitic injunctions, and it was a matter of course to him that they did not thereby defile themselves. It must sometimes have been difficult for a carpenter when at work to obey the circumstantial commands of eating his meal in the orthodox fashion. Jesus knew that the law meant purity of heart and not of hands, and he understood that not the food that enters the mouth but the words that come out of the mouth defile the character of a man.

It is the directness of his experiences which conditions his superiority and the breadth of his mind shown in his communion with the pious Jews as well as with the publicans and sinners; and this is not the product of study, and of consideration, but natural instinct, which becomes more and more a conscious opposition to the narrowness of Phariseeism. The gist of his doctrine is contained in the words, "The poor have the Gospel preached to them," and St. Luke says: "The Son of Man is come to seek and to save that which was lost." But his salvation does not consist in urging the severity of Phariseeism, but in preaching the Kingdom of Heaven, which since those who are invited do not come, will be inherited by the crippled, the lame, and the beggars from the street.

THE CRUCIFIXION AND RESURRECTION.

Jesus no doubt exercised a great influence over the sectarian element of Galilee and for a short time also of Jerusalem, but the main fact of his life is his passion on the cross and his death. Without his martyrdom he would never have been hailed as the saviour of mankind. The dogmas of Christianity, and even the doctrine of the atonement by blood, developed in the Gentile world independently of Jesus. The dogmatic and ecclesiastical features of the Church would have become what they are now whether Jesus of Nazareth or some other sage, say Apollonius of Tyana, had be-

come the recognised saviour of the world. But the beauty of Christianity is the humanity of Jesus and the charm of it which at once conquered the hearts of the people for him is his innocent death on the cross. And Jesus's death on the cross must be regarded as a well authenticated fact.

The violent death of Christ had shaken the faith of his disciples and intimidated his followers. While formerly they had made public demonstrations in his honor to receive him at his entry into Jerusalem as the Son of David, they now gathered secretly behind closed doors. Still some were left, and the echo of the beloved Master's words which still lived in their memories comforted them in their tribulation. They bethought themselves of his warnings, in which he had predicted that the Son of Man must suffer before he could attain the glory of the life eternal. Since spiritual manifestations, miracles, and visions of all kinds were no less frequent occurrences among believers in the times of Christ than they are now, it was but a matter of course that he was seen in various places by his disciples. The possibility of such phenomena in the minds of excitable people is beyond the least shadow of a doubt, and a vision is as real to the man who has it as the sight of actual things under ordinary circumstances. But visions are not as definite as actual occurrences, and thus we must expect that our tradition becomes indistinct. Professor Holtzmann characterises the Gospel records on this subject as follows:

"In the scope of the synoptic Gospels there is no event which is told with so many contradictions. The words *οὐκ ἐστιν ὧδε*, 'he is not here' (Matt. xxviii. 6 = Mark xvi., 6 = Luke xxiv., 6), are the sole point on which we find a literal coincidence. Even the words of the resurrected one (as reported in Matt. xxviii. 18, Luke xxiv. 25, 44, Acts i. 7) are by no means compatible, still less the localities. At any rate, the appearances of Jesus at Jerusalem are related in such a way as to exclude the appearances in Galilee, and *vice versa*, for in Matthew (vii. 10) and Mark (vii.) the disciples receive the express command to go to Galilee for the purpose of receiving more revelations from the resurrected Jesus, while in Luke (xxiv. 49) they are not less positively instructed to remain in Jerusalem. And while according to the text of Luke (xxiv. 33–53) the last appearances of Jesus seem to have occurred on the very day of resurrection, the same author (in Acts i. 3) relates them as having happened on the fortieth day after Easter; and Matthew (xxviii. 16) at least assumes

the time which was necessary for a journey from Jerusalem to the lake of Galilee for the continuation of such manifestations. The Gospel according to Mark, however, which whenever secondary references come into conflict could be resorted to successfully, breaks off with xvi. 8. But while according to Mark the women said nothing to any man they do the very opposite according to Luke xxiv. 9, where they 'told of these things unto the eleven and to all the rest.' According to Luke xxiv. 4 they see two angels, according to Mark xvi. 5 and Matthew xxviii. 5, one angel, who in Matthew xxviii. 2–4 had already attended to the opening of the grave of which the other Gospels know nothing. Not less apparent are the contradictions with reference to the mode in which the continued life of the resurrected is conceived. For, while on the one hand the most palpable evidences are given for the bodily identity of the resurrected with the crucified One, so as to attribute to him the faculty of being felt by touch and a physical way of alimentation (Luke xxiv. 15, 16, 31, 36, 51); other characteristics make him appear, not as a man re-awakened to life, but as a supernatural being (Matt. xxviii. 9, 17) before whom they fall down to worship. He is spoken of as being possessed of a face that even his disciples recognise only by degrees. He appears suddenly and disappears (Luke xxiv. 31, 36, 51). The disciples on one occasion believed they had seen a spirit, and on another they doubt the identity of his person (Matt. xxviii. 17). Upon the whole, the mode of his existence has already attained here the degree of an omnipresence which he appears to have reached in later days when Christ appears from the heavens to Paul near Damascus and to John on Patmos."

The belief in the resurrected Christ begins with the report of the empty grave. The Gospel according to St. Mark concludes as follows (Mark xvi. 1–8):[1]

"And when the Sabbath was past, Mary Magdalene, and Mary the mother of Jesus, and Salome had brought sweet spices, that they might come and anoint him.

"And very early in the morning, the first day of the week, they came into the sepulchre at the rising of the sun.

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[1] The passage Chap. xvi. 9–20 is a later addition which is not contained in the oldest codex ("Aleph B"). Diction and grammar are different from Mark's style. It appeared first in Latin versions of the New Testament. (See Dr. Edwin A. Abbott's book *The Common Tradition of the Synoptic Gospels.*) New Testament scholars recognise in this questionable passage a compilation from the Gospels of Matthew and Luke and John.

Two manuscripts (called Codex L and the Syriac Philoxeniana, both not before the eighth century) contain another conclusion which is shorter than the addition which has been received in our versions and reads as follows: "All the instructions, however, they (the women) proclaimed at once to the congregation of Peter. After this, Jesus himself dispensed through them from the Orient to the Occident the holy and eternal proclamation of everlasting salvation."

"And they said among themselves, Who shall roll us away the stone from the door of the sepulchre?

"And when they looked, they saw that the stone was rolled away, for it was very great.

"And entering into the sepulchre, they saw a young man sitting on the right side, clothed in a long, white garment; and they were affrighted.

"And he saith unto them, Be not affrighted: Ye seek Jesus of Nazareth, which was crucified; he is risen; he is not here; behold the place where they laid him.

"But go your way, tell his disciples and Peter that he goeth before you into Galilee; there shall ye see him, as he said unto you.

"And they went out quickly and fled from the sepulchre; for they trembled and were amazed; neither said they any thing to any man; for they were afraid."

In Matthew the account of Christ's resurrection has been considerably added to; and there is a definite tendency reflected in the situation. The chief priests and Pharisees procure a guard from Pilate to watch the grave, "lest the disciples come by night and steal the body." The inference suggests itself here that unbelievers saw nothing strange in the disappearance of a body. We read Chap. xxviii. 1–10:

"In the end of the Sabbath, as it began to dawn toward the first day of the week, came Mary Magdalene and the other Mary to see the sepulchre.

"And, behold, there was a great earthquake: for the angel of the Lord descended from heaven, and came and rolled back the stone from the door, and sat upon it.

"His countenance was like lightning, and his raiment white as snow.

"And for fear of him the keepers did shake, and became as dead men.

"And the angel answered and said unto the women, Fear not ye: for I know that ye seek Jesus, which was crucified.

"He is not here: for he is risen, as he said. Come, see the place where the Lord lay.

"And go quickly, and tell his disciples that he is risen from the dead; and, behold, he goeth before you into Galilee; there shall ye see him: lo, I have told you.

"And they departed quickly from the sepulchre with fear and great joy; and did run to bring his disciples word.

"And as they went to tell his disciples, behold, Jesus met them, saying, All hail. And they came and held him by the feet, and worshipped him.

"Then said Jesus unto them, Be not afraid: go tell my brethren that they go into Galilee, and there shall they see me."

As the grave is said to have been closed by a big stone and guarded by soldiers, the motive of the women could no longer be to embalm the body, but simply to see the sepulchre; and now Christ's resurrection happens before their eyes. There was a great earthquake; an angel rolled back the stone, and, to heighten the dramatic effect, sat upon it. Christ himself still remains invisible, and the announcement of his resurrection is made as in Mark.

The problem of resurrection reached a new phase when the question arose whether the resurrected Christ was the self-same person or a mere spiritual presence, a demon, or a ghost; and the Church took the first horn of the dilemma. The conviction of the bodily identity of the resurrected Christ with the crucified Jesus who was buried in the sepulchre, resulted in another modification of the report which is preserved in Luke, and now Christ is not only seen, but speaks to the disciples and identifies himself by showing his hands and feet, proclaiming directly that he is no mere spirit but a body of flesh and bones. Christ is now supposed to have a truly material body. He says (Luke xxiv. 39): "A spirit hath not flesh and bones, as ye see me have." This account is still further surpassed in the Gospel of St. John, the latest one among the four canonical Gospels, in which Christ requests Thomas the doubter, saying (John xx. 27):

"Reach hither thy finger, and behold my hands; and reach hither thy hand, and thrust it into my side; and be not faithless, but believing."

Further on St. John makes Jesus eat in the presence of the disciples in order to convince them of his bodily resurrection. We read in Chap. xxi. 12–13:

"Jesus saith unto them, Come and dine. And none of the disciples durst ask him, Who art thou? knowing that it was the Lord."

"Jesus then cometh, and taketh bread, and giveth them, and fish likewise."

Mankind crave after the material life, they want to preserve their personality, body and all. Hence this increased assurance of Christ's bodily resurrection, and such Gospel manuscripts as regarded Christ a mere spirit were rejected as uncanonical. Even those who believe in the personal resurrection of Christ concede the gradual growth of legendary elements in the various reports which

tend to become more and more materialistic, finally establishing the resuscitation of the dead body with all its bodily wants.

There are four stages in the development of the reports on the resurrection of Jesus. First the resurrected Jesus is merely an object of sight, as in the original statement of the vision of St. Paul, then he addresses his disciples and speaks to them, thus involving the sense of hearing. In the third stage we are told that Jesus was touched and could be felt with the hands. The idea that he may be an immaterial and mere spiritual personality (*δαιμόνιον ἀσώματον*) is here directly objected to in the argument that "a spirit, i. e., a ghost or demon (*δαιμόνιον*), has not flesh and bones." In order to prove beyond the shadow of dispute the identity of the Crucified and the Resurrected, the narrator insists that the disciples saw and felt the wounds made by the nails. But the climax of materialising the resurrected Jesus is reached when he is represented to eat for mere show, not to appease hunger, but to demonstrate his bodily presence. And all these legendary reports prompted by the doctrine of the bodily resurrection of the early Church have overgrown and cover almost completely the original statement of the empty grave, which seems to be the historical nucleus of the resurrection stories and furnished the first argument of the disciples.

Prof. Paul Schwartzkopff, a Christian and a believer, by no means sceptical, feels compelled to surrender the idea of a bodily resurrection of Jesus for a resuscitation of his spiritual personality. He believes that the body of Jesus was purloined, which is quite possible considering the superstitions of the age connected with the remains of hanged and crucified persons. Schwartzkopff argues that God's providence suffered this for the sake of avoiding worse evils, such as relic worship and other pagan monstrosities. Incidentally, we may add, the absence of the body helped to mature the belief in immortality which passed through several phases and left imprints of their successive stages in the doctrines of the early Church.

There is a little story reported in Luke which in all its incidents is so lifelike that, although it may be of a later date, it possesses a peculiar poetical charm and is more vivid than any one of the

other accounts of the appearances of Jesus after death. It reads as follows (Luke xxiv. 13–35):

"And, behold, two of them went that same day to a village called Emmaus[1] which was from Jerusalem about threescore furlongs.

"And they talked together of all these things which happened.

"And it came to pass, that, while they communed together and reasoned, Jesus himself drew near, and went with them.

"But their eyes were holden that they should not know him.

"And he said unto them, What manner of communications are these that ye have one to another, as ye walk, and are sad?

"And the one of them, whose name was Cleopas, answering said unto him, Art thou only a stranger in Jerusalem, and hast not known the things which are come to pass there in these days?

"And he said unto them, What things? And they said unto him, Concerning Jesus of Nazareth, which was a prophet mighty in deed and word before God and all the people:

"And how the chief priests and our rulers delivered him to be condemned to death, and have crucified him.

"But we trusted that it had been he which should have redeemed Israel: and beside all this, to-day is the third day since these things were done.

"Yea, and certain women also of our company made us astonished, which were early at the sepulchre;

"And when they found not his body, they came, saying, that they had also seen a vision of angels, which said that he was alive.

"And certain of them which were with us went to the sepulchre, and found it even so as the women had said: but him they saw not.

"Then he said unto them, O fools, and slow of heart to believe all that the prophets have spoken:

"Ought not Christ to have suffered these things, and to enter into his glory?

"And beginning at Moses and all the prophets, he expounded unto them in all the scriptures the things concerning himself.

"And they drew nigh unto the village, whither they went: and he made as though he would have gone further.

"But they constrained him, saying, Abide with us: for it is toward evening and the day is far spent. And he went in to tarry with them.

"And it came to pass, as he sat at meat with them, he took bread, and blessed it, and brake, and gave to them.

"And their eyes were opened, and they knew him; and he vanished out of their sight.

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[1] Emmaus, probably the present Kalonije, not Emmaus Nicopolis.

"And they said one to another, Did not our heart burn within us, while he talked with us by the way, and while he opened to us the scriptures?

"And they rose up the same hour, and returned to Jerusalem, and found the eleven gathered together, and them that were with them.

"Saying, The Lord is risen indeed, and hath appeared to Simon.

"And they told what things were done in the way, and how he was known of them in breaking of bread."

The objective facts of the story of Emmaus, which lie within the sphere of natural possibility, are easily distinguished from the subjective additions. Two disciples meet a stranger who is also a disciple, and while he speaks to them with enthusiasm on the necessity of Christ's suffering before he could enter into his glory, their heart burned within them. The stranger must have heard Jesus preach, for he was not only well versed in the new doctrines, but shared in the habit of blessing and breaking the bread as did all the Nazarenes. The stranger never claimed to be Christ; but when the two disciples saw him no more, they felt assured that no one but Jesus could have spoken to them as did that mysterious stranger. And indeed Christ spoke to them out of the mouth of their companion on the road, whom they had invited as a guest. Whoever the stranger may have been, Christ's words and habits of life lived in him, and by them they recognised instinctively that while the body of Christ was surrendered to the grave, his soul and whole being was still a living presence powerful to lead mankind to a higher conception of a higher morality.

THE CAUSE OF THE SUCCESS OF THE GOSPELS.

Considering the character of the Gospel accounts of the life of Jesus, we come to the conclusion that they contain an historical element, which in the beginning was handed down by tradition, then was committed to writing in the shape of the original text of the older Mark, and lastly was rewritten for certain dogmatic purposes, in order to satisfy the several doctrinary needs of the Church, in the shape of the four canonical Gospels, such as we have them now. It is difficult in the present condition of scientific insight, and with the critical material at hand, to believe the Gospel accounts literally and regard them as unqualifiedly inspired books. The un-

critical spirit of the writers, the looseness and lack of exactness in their method of telling events, their imperturbable credulity, are too obvious to render them reliable witnesses or to permit the Gospels to be counted as historical books. In addition, we ought to consider that the ungrammatical language testifies to the insufficient education of the Gospel writers who gave rather their impressions than the results of real investigations of facts, which thus must be accepted as products of simple-minded piety, rather than historical evidences.

Thus, the Gospels are not scientific evidence. But consider the situation as it was, and we shall not go astray in esteeming them after all as belonging to the most noteworthy and remarkable class of books that have ever been written and worthy of being compared with the greatest works in literature, both philosophical and poetical. They are immediate outpourings of the human heart, weaving round the facts of real events significant fancies, entwining the tree of history like exuberant ivy, concealing to a great extent the solid trunk which gives them their support.

We need not side with those who denounce Christianity on account of the legendary element which it contains, nor with those who naïvely believe in the letter of the legend. There is no need of decrying the authors of those writings as imposters and liars, if they make accounts which in the light of rigorous critique are found to have been added to by their imaginative devotion. It is true that if authors of to-day should be guilty of the same proceedings, they ought to be charged with insincerity; but we must consider the times which were different, and especially the atmosphere of the lowly classes in which Christianity first developed. The minds of these men were not in a condition to distinguish between fact and fancy. It lies in the nature of things that the religion destined to become the universal religion of mankind should have grown from below upward, and not from above downward. Whatever inspirations the lowly and downtrodden masses from whose ranks the members of the early Christian Church recruited themselves may have received from Oriental and Greek philosophy, the germ itself of the new religion must have been in their own hearts,

and thus was necessarily influenced by the spiritual world in which they lived, with its ideal aspirations, but also with all its limitations.

If the religious spirit of the early Christians had proved to be critical and scientific, it would never have taken hold of the imagination of the masses; it would have proved an abortion. Thus, we must understand that the poetry of the Church, even though it showed itself in the uncritical formation of legends, was as essential in the development of Christianity as are blossoms in the spring. The spring blossoms, with their showy petals, attract the eye, and seem to be the most essential thing in the development of the tree; and yet their fate is to fall and leave the less ostentatious but more substantial seed-bulb, which is destined to develop into useful fruit.

The significance of the Christian Gospel, i. e., of the story of Jesus of Nazareth and his martyr-death on the cross, accompanied by the belief of his disciples that he is risen from the dead and manifests himself as a living presence to his followers, becomes apparent when we consider its rapid success.

The Christian Gospels presented themselves at once as the solution of the religious problem of the day. The figure of the Messiah as here represented was upon the whole so sympathetic that the various Gnostic schools and congregations immediately conceived a love for Jesus of Nazareth. To be sure, there were differences of opinion concerning the metaphysics and ethics of the new religion, but there could no longer be any doubt that the prophet of the new Gnosis must be humanly divine, such as was the hero of this wonderful story,—wonderful because realistic, and realistic because its nucleus is a true story from life. And so Jesus of Nazareth was bound to become the center of the Gnostic movement, for all the Gnostics, whatever be their views in ethics and metaphysics, express a passionate love and admiration for the gentle prophet of Galilee. This is most apparent in the *Pistis Sophia*, where we read:

"When, therefore, the Saviour had said these words, the disciples came forward and cried out all together, saying: 'O Saviour, thou excitest us with exceed-

ing great frenzy because of the transcendent height which thou hast revealed unto us; and thou exaltest our souls, and they have become paths on which we travel to come unto thee, (280) for they came forth from thee. Now, therefore, because of the transcendent heights which thou hast revealed unto us, our souls have become frenzied, and they travail mightily yearning to go forth from us into the height to the region of thy kingdom."

Simon Magus, although he taught that he himself was God incarnate, felt the fascinating spell of the figure of Jesus and of his simple human divinity.

The life and deeds of Apollonius of Tyana were written down by his disciples, because they had not as yet heard of Jesus of Nazareth. Had they heard of him, they would no longer have regarded Apollonius as the realisation of their religious ideal and would have credited the former rather than the latter with all the miraculous powers of a God made flesh. Even he must be of humble birth, a poor man living with the poor among the poor, such as was Jesus; he must have set an example in suffering and self-resignation, and above all, his doctrines must not be technical and learned, but popular and direct, always giving the new ethics in pointed sentences which drove home the new truths in their moral aspect and could easily be remembered by the untutored multitudes. Such indeed were the methods of Jesus when he preached. In addition, he was expected to perform miracles to prove his divine mission. Miracles were performed by Simon Magus and by Apollonius of Tyana; but it appears that their miracles, as they were related by their disciples, were too pretentious and showy; they probably proved too much, while the more modest miracles of Jesus of Nazareth made a more favorable impression upon the sober-minded and the thoughtful.

CHANGES IN THE EVOLUTION OF CHRISTIANITY.

Jesus had lived among the Jews of Galilee and Judæa as a Nazarene. He had preached in parables and proclaimed the approach of the kingdom of heaven upon earth, by which he probably meant a socialistic brotherhood; but there is scarcely any doubt that he did not teach any of the dogmas of the later Church. Yet

from the communistic society that was organised under the influence of his extraordinary personality by his disciples in Jerusalem, a movement was carried out into the Gentile world that was destined to become the official religion of the Roman Empire.

Since Alexander the Great, the Jews had spread among the nations of the Roman Empire without surrendering their religion and Jewish customs. They became mediators of the monotheistic idea and helped to prepare the world for the acceptance of Christianity. The translation of the Old Testament into Greek, commonly called the Septuagint, was a condition of the *pleroma*, the fulfilment of the times. Without the Greek Bible we might have had the provincial literature of an Aramaic religion, but no New Testament theology. All Greek sages became greatly interested in Judaism on account of its stern monotheism, and many joined the Jewish faith, without, however, accepting either circumcision or the Mosaic law. They remained mere guests in the synagogues of Israel and a few only became proselytes.

Thus while the Greeks began to expect a religious revelation from the Jews, the Jews of the *diaspora* themselves became acquainted with Greek philosophy. And they were astonished at the purity and precision of Aristotle and the grandeur of Plato. The doctrine of the immortality of the soul so plainly set forth in the Phædo made a deep impression on them, and the result was a peculiar literature in which Greek and Jewish thoughts were blended, leading on the one hand to such Apocrypha as the Book of Wisdom and on the other hand to the philosophical conceptions of Philo, who developed the idea of the divine Logos.

The man who undertook the work of giving a definite character to the religious thought that was thus spreading through the Roman Empire, was Saul of Tarsus, a Pharisee, who had bitterly persecuted the Jewish congregations of the disciples of Jesus and played a prominent part in the condemnation and stoning of Stephen, the first martyr of the young Church. The gladness and the spirit of rejoicing with which Stephen died must have powerfully affected the soul of Paul. Against his own will he became convinced that there was a great truth in the new movement, and that

he was wrong to suppress it. But the more his conscience reproved him, the more zealous did he become in his antagonism to the disciples, until, at last, he could bear it no longer. The new conviction that had slowly taken a firm hold upon him in the subconscious regions of his soul flashed upon him in the shape of a vision. With this occurrence Saul, who later on called himself Paul, began a new life; and ever after did he consider his vision as the authorised call to his apostleship and also as an actual and unequivocal evidence of Christ's bodily resurrection from the grave.[1]

The passage 1 Cor. xv. 5–8 is important as being the weighty but sole evidence of a direct witness of Christ's resurrection. It speaks of Christ's having been first seen by Cephas, and then by the twelve, afterwards by more than five hundred brethren at once, and by all the brethren at once, and finally James the brother of Jesus, and by all the Apostles, lastly by Paul. The ascension is not mentioned, and Paul's words imply that his vision of Christ was not different in kind from the appearances which the other Apostles had had of their resurrected master.

But while the old Apostles believed in the Messianic misssion of Jesus in spite of his execution on the cross, Paul believed on account of it. The passion of Christ and his death[2] on the cross constituted to him the means of salvation which we can make our own only through faith. He says (1 Cor. i. 23):

"But we preach Christ crucified, unto the Jews a stumblingblock, and unto the Greeks foolishness."

And in Gal. vi. 14:

"But God forbid that I should glory, save in the cross of our Lord Jesus Christ, by whom the world is crucified unto me, and I unto the world."

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[1] It is well known that St. Paul refers to this incident in his Epistles only in a general way, (1 Cor. ix. 1 and xv. 8); and the Acts contain three reports (ix. 4–5, xxii. 6, and xxvi. 12) which in some details do not agree. The event itself, however, must be regarded as an established fact. Paul suffered from an epileptic attack on the road to Damascus, fell to the ground, and had a vision, or, as physicians now-a-days would say, a hallucination. The main thing, however, is that he believed for the rest of his life that he was confronted on this occasion by Jesus himself.

[2] See O. Pfleiderer, *Das Urchristenthum*, p. 41.

While St. Paul dropped almost all that had been regarded as essential by the leaders of the young Church at Jerusalem, he introduced a new idea which constituted a radical change of the Christ idea. It is natural enough that Paul's theory was not acceptable to the disciples at Jerusalem, so that he had to seek a broader field for his missionary work among the Gentiles. The Apostle found the soil prepared for his doctrines. Although he had to struggle, as was natural enough, against other conceptions of the spirituality of man and the modes of salvation, he found everywhere congregations of disciples who held similar views and could thus easily gain followers who were attracted by the systematic presentation of his views, by the conviction of his enthusiasm, and the sober spirit in which he applied them to the moral problems of actual life. We shall better appreciate him if we compare his views with the extravagances of magicians like Simon (Acts, Chap. viii), with prophets who talked in the style of Hermes Trismegistos, with Gnostics such as the author of the *Pistis Sophia*, etc. There may have been some among them who had still purer and nobler conceptions of believing in a universal manifestation of the Logos or spirit of God among all nations. When men of this latter type joined the young Church they rejected the belief in the doctrine of a bodily resurrection and were inclined to an allegorical interpretation. It is probably this view which St. Paul criticises when speaking of those who deny the resurrection of Christ. (1 Cor., Chap. xv.) The phantastical theories of Gnosticism were unfit to survive on account of the crudities and superstitions of their views, while the purer conceptions of a spiritual immortality did not find favor with the sensual masses who wanted a belief adapted to their materialistic constitutions. Perhaps the representatives of these doctrines were too aristocratic and cold, keeping aloof from and even looking with contempt upon the vulgar and the ignorant as unfit to comprehend the truth. The Judaising elements among these aspirations were very strong, but since they had no root in the hearts of the Gentiles we can readily see that in the universal struggle for survival there was for them no chance of success. The Christianity of St. Paul was, among all the religious theories that were advanced in

the first century of our era, the only one that was adapted to the needs of the people at large, and the more new documents are brought to light, the better we understand that in the long run his preaching alone could survive.

Christianity changed when the Apostle St. Paul transferred it from Jerusalem to Greece. The Christians at Jerusalem never looked upon the Gentile Christians as their equals, but they regarded them as followers of Jesus, although only of a second degree.

The question arises: Was the Pauline religion still Christianity,—the Christianity of Jesus? Is it not misleading that the same name should apply to the communistic idealists of the Jerusalemic Church as to the more cultured but less socialistic Gentiles? Many of Christ's injunctions were no longer interpreted literally, and instead of abandoning the world, the Pauline Christian lived in the world as though he enjoyed it not; he no longer gave up his property but used his possessions as though he owned them not. His aspiration was to be free from egotism and lust; but he no longer offered his left cheek to him who smote him on his right cheek; he was ready to defend his person and honor, but he deemed it his duty to struggle, not for the satisfaction of personal vanity, but to uphold justice. He stood up for his rights, not because it was *his* cause, but because he trusted that his cause was right. In this way the Gentile Church poured new wine into old bottles and transformed the original ideal of Christianity. Riches were in themselves no longer deemed to be a hindrance to a godly life; there was no need of giving them up, but the rich were requested not to boast of their wealth; covetousness, miserly conduct, and hard-heartedness were upbraided, and charity was recommended. We read in the first Epistle of St. John (iii. 17):

"But whoso hath this world's good, and seeth his brother have need, and shutteth up his bowels of compassion from him, how dwelleth the love of God in him?"

From an impartial standpoint we can now readily see that this transformation made Christianity possible. Paul's Christianity originated from a desire to apply the Christian ideal to practical life,

and the changes wrought by these aspirations rendered it fit to preserve its existence. The primitive Christianity of the Church at Jerusalem went to the wall, but the Christian spirit was preserved and served as a leaven to leaven the lump of all the nationalities of Europe.

The question whether we have a right to call the Pauline religion and the older Jewish Christianity by the same name is about as legitimate as the question whether Tom Smith who is now a boy should still retain the name which was given to him when he was a baby. He has changed so radically that his own mother would not recognise him, if she had not witnessed all the changes of his development herself. The question, therefore, is to be answered in the affirmative. All religions and political institutions have a right to their original names so long as the historical connexion is preserved or re-established, and so long as their representatives feel that the spirit of the original movement is still living in them in one form or another.

Names are in themselves mere sounds. The main thing is what is meant by a name, and that is more a matter of subjective definition and arbitrary determination than of logical argument or objective demonstration.

Christianity changed again when transferred to Rome, and when it became the established and official religion of the Empire. The change was not for the better. Yet it remained Christianity, preserving still some of the nobility and charitable love of its founder.

When Christianity was transferred to the liberty-loving Barbarians of the North, it again entered into a new phase which raised it considerably above the creed of the authority-worshipping Romans. The difference between these two forms of Christianity remained long hidden until a crisis appeared in the time of the Reformation which led to the schism between Roman Catholics and Protestants. Luther and the other reformers imagined that they resorted to the old ideals of Christianity, and they did, so far as they understood it. As a matter of fact, they were not reformers, but builders of a new Christianity which was better adapted to the

needs of the progressive Teutons and Saxons than Romanised Christianity which had never taken root in German and English soil.

But the Reformation is not as yet the end of the world's religious history. Various Christian sects have been transplanted to American soil and are thriving. But he must be a superficial observer of the human heart who imagines that American Christianity is the same as its European mother. Even the most conservative Churches, the Episcopalians and the Roman Catholics, are very different from their brethren in the Old Country. The fact is undeniable that a new form of Christianity is preparing itself in our very midst. Our Church people do not notice it simply because the change is an adaptation to the changes in their surroundings. Thus we do not notice that the train moves if it but move gently, unless we look out of the window.

The Parliament of Religion is a new phase, the importance of which cannot be overestimated. There are voices of warning who would fain bid the progress of the world to halt, because they imagine that it is the way to perdition. But let us not be intimidated; the world is moving still, and so long as we can trust in the divinity of truth and the holiness of love, we need not shrink from advancing in whatever direction they may lead us. If the old religion of our fathers will no longer remain in the letter of their dogmas as it was, it need not concern us; let us rest assured that if it changes by becoming truer, it will change for the better.

EDITOR.

LITERARY CORRESPONDENCE.

FRANCE.

M. ANDRÉ LALANDE attacks a broad subject in his *La dissolution opposée à l'évolution dans les sciences physiques et morales.* To the old current thesis, conformably to which all things increase by dissimilarity and by individuality, he opposes antithesis,—a term which has hitherto been accounted negligible. It is not the transition from homogeneity to heterogeneity, from non-coherence to coherence, as Spencerianism has it, that shapes the destiny of the universe; but on the contrary, the undifferentiation, assimilation, and dissolution which result therefrom, are things fraught with the greatest theoretical importance and with the highest ethical value.

M. Lalande exhibits to us accordingly the triumph of dissolution: (1) in the *mechanical order* where things tend toward unity, not toward diversity, that is to say toward equilibrium of temperatures and toward dissipation of energy; (2) in the *physiological order* where death reigns, where fecundation is merely a decreasing differentiation, and where even thought itself hastens the destruction of individual organisms; (3) in the *psychological order* where every grand, intellectual, scientific, or artistic idea has for its ultimate object the rendering of men less different from one another and the robbing them of their specific individuality in order to make them identical with their fellow beings; (4) in the *social order* where the diversity is primitive, whatever one may say,—for we see castes, the clan, the family, and the ancient municipality breaking up with time,—where even the division of labor, far from being the phe-

nomenon of increasing heterogeneity as it seems at first glance, is but a temporary and superficial specialisation only, where, finally interbreeding, becoming every day more extensive and unregulated leads inevitably to the undifferentiation of heredity.

The book abounds in sound opinions and in lofty *aperçus*, as well as in learned criticisms; but it exhibits at the same time an acumen which is sometimes merely a cloak for paradox. I have elsewhere criticised as far-fetched the analogy which Spencer has established between the unfoldment of a nebulous mass and division of economic labor, for example. If it is true that Spencer has strained the bond of analogy existing between the facts of the various sciences of matter and of man in favor of evolution, it is also true that M. Lalande has strained it in no less a degree in favor of dissolution. The parallelism which he posits between mechanical dissolution and social dissolution is a factitious one. Physiological death is not a phenomenon comparable to the unification of intellectual consciousness, and this relation can be upheld only at the expense of a change of meaning or as a metaphor. The route which he travels, in fine, is that of evolutionism itself; the difference being that the two philosophies start out from the same point but in different directions, the one proceeding towards *A* and the other towards *B*.

M. Lalande advocates an irreducible dualism of mind and matter. This fundamental view leads him to the theory of dissolution and serves him in the demonstration of this theory. The highest intelligence, he tells us, tends to altruism, which is by its very nature a dissolvent; it contradicts thus the tendency of physical life which carries us toward integration, toward egotism. But in the first place he exaggerates the contrasts between the two tendencies, and pushes too zealously his comparison of evolution to individuation. Then the dualism which he professes overleaps and strangely exaggerates in my opinion the admitted irreducibility of psychological facts to physiological facts; that irreducibility may be practically "absolute," without entailing on us any prohibition of a "logical" reconciliation, and M. Lalande himself is likely ultimately to accept a species of monism for the reason that in the

final dissolution which he proclaims the contradiction inherent in the present state of the universe would be annihilated. Dissolution and evolution are undoubtedly states only of the universal rhythm, beyond which metaphysics holds sway. One is inclined, moreover, to contest the advantages of an ethics deduced from this philosophy of dissolution, which would lead us towards the extinction of consciousness and of life in a sort of mystical sleep.

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M. ARTHUR HANNEQUIN attacks a problem no less lofty in his *Essai critique sur l'hypothèse des atomes dans la science contemporaine.* He has undertaken to establish the necessity of atomism, while showing at the same time that it exhibits contradictions; and he strives to reconcile these contradictions by means of metaphysics. Thus, his work is both scientific and philosophical: this twofold character appears always in his discussions of higher hypotheses.

The atom—I am merely summing up the conclusions of the beautiful work of M. Hannequin—is born of number, that is to say of the necessity which impels the mind to carry its analysis to regions where it encounters a clearly-defined unity, the indivisible element, of which things are composed. But though geometry can go straight to the abstract, physics cannot. We are obliged here to postulate as finite the complex element which our retrogressive analysis reaches. That which succeeds in geometry does not succeed in reality; we cannot give to the element sought an unlimited mobility, and we cannot believe that that element has a real existence without having something fixed in its nature or finite in its dimensions. Thus is imposed upon our science the task of defining a material unity: the atom is the outcome of the struggle waged by quantity against magnitude, by unity and by number against the multiplicity and continuity of space and time. This spatial atom involves none the less a contradiction; it carries with it the ineffaceable proof that something in the world escapes the inquiring intellect. The only way of removing the contradictions scattered along our pathway is to say that the atom is merely the object of a concept, that it is the work of our knowledge, and not only is it unnecessary to endeavor to see here the absolute

element of the Real, but it would be illusory to see here even a genuinely irreducible element, the ultimate term of all our analyses. "The definite but always complex element designated by this name, which is nothing more in the total edifice than a provisional support, remains in possession of a structure which gives to it with a minimum extension in space also a minimum of dynamic attributes. And whereas dogmatic atomism sees here the absolute gathered in a point of space, the real individual stripped of all activity and of all quality, all that really is to be seen here is the work of the intellect pursuing in space the complete reduction and organisation of figured magnitudes, of those pure appearances which are phenomena, but which by virtue of the very nature of space are, as Leibnitz has said, appearances that are thoroughly established."

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It was not by sheer chance that M. DURAND (DE GROS) has coupled together in the title of his new book, *Nouvelles recherches sur l'esthétique et la morale*, the two words, esthetics and ethics: for his doctrine very effectively associates them. Ethics is for him but a branch of esthetics,—esthetics designating the entire science of sensation and of sentiment, or as Kant said, "The science of the laws of sensibility in general," which forms the counterpart to logic, "the science of the laws of understanding."

Thus understood general esthetics would lead to the union of studies which have hitherto been separate. Starting out with the principle which is of very wide application that, "All the subjective modifications confounded under the vague names of sensation and sentiment are regulated by a common law, and presuppose, each and every one, a modifiable subjective force, a modifying objective force, and an instrument or organ of relation," esthetics would be divided into the following three categories: (1) *psychological esthetics*, in which we should study the subjective causes of sensation and sentiment and all their peculiar effects; (2) *physiological esthetics*, in which we should study the organic causes; and finally, (3), *physical esthetics*, in which we should study the objective causes. Here then is given a first bond of union—a bond of method estab-

lished between the sciences of the beautiful, the good, and the true; and I doubt not that there is advantage in keeping such a classification before the mind in matters so complex. It is fitting to add, however,—for the studies composing this volume were written by M. Durand (De Gros) thirteen years ago,—that the esthetic and moral sentiments, together with the intellectual sentiments, have been placed to-day upon one and the same plane in the general theory of sentiment, and that the different domains are not separated by barriers so impenetrable as to prevent the partial equivalence of art, morals, and science from being the foundation of many modern theories.

But what remains peculiar to the sphere of art, if it is not science or morals properly so called? Morality—as I expressed myself upon this point in speaking of the drama—is not the aim of art. It is a condition of dramatic pleasure. Art is directly useful (this is the biological point of view) in so far as it denotes the exercise of natural faculties. It is indirectly useful in so far as it ennobles the individual and strengthens the social bonds (the moral point of view), and also in so far (the scientific point of view) as it is a mode of knowledge and reveals something of man and of external nature. It remains nevertheless distinct, both by its means of expression, its language (sound, color, etc.), and by its immediate aim, which is a specific enjoyment or affective state at the same time that it is an intellectual pleasure.

It does not seem to me that M. Durand (De Gros) understands things differently, although he employs a peculiar terminology. I need not contradict the double rôle which he assigns to sensation: pleasure and pain on the one hand, useful effects on the other; my sole reservation is that he most certainly goes too far in slighting the importance of the specific emotion of art in order to augment the value of the moral emotion which he exacts from it. But this reservation does not prevent me from adhering to his idealistic doctrine—which is essentially cautious—an idealism of art assigning to human genius the task of conceiving and exhibiting types of perfection and sensible beauty, which are in the logic or possibility of things, but which natural forces have not realised; an idealism of

morals which commits to our individual efforts the task of making society better, and of creating the "human" being, of which nature has given but the embryonic beginning in the "animal" man.

I think also with the author that theory should always pave the way to application, but I believe at the same time that it is wise to exercise a jealous care over the independence of theory, and that it is unnecessary in researches upon esthetics and morals to occupy oneself inordinately with the present state of manners or with current artistic models, or to seek the justification of what exists to the detriment of another ideal which is realisable.

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Alongside this volume of M. Durand (DeGros) of which I am far from exhausting the contents, I shall place that of M. E. Marguery, *L'œuvre d'art et l'évolution*—a collection of interesting talks, in which the author with adequate appreciation for the things of art touches with a delicate hand upon many difficult questions in this domain; but I regret not being able to stop longer at his work, as I have still to make rapid mention of several other books.

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If there is a fact that can be regarded as established at this day it is the correlation of psychological states and the complexity of the ego. The champions of the old psychology are themselves forced to borrow the materials for their demonstrations from psycho-pathology. Such is the predicament of M. G. L. Duprat in his *L'instabilité mentale*, which is otherwise a work of merit. He considers mental instability as a fundamental fact, and he seeks in "character" a directing principle for mental evolution, which by its permanence should form a counterpoise to that instability. Everything, he declares, that is asystematic is morbid; but physiological disaggregation would be the consequence, not the cause, of this character of asystematisation. It then happens that psycho-pathology alone throws light upon this "pure" psychological character by means of which M. Duprat flatters himself upon having explained the facts that psycho-pathology does not explain. It is a vicious circle. Let us hold, I should always say, to the constant method of the sciences, which is to establish the laws of correla-

tion between facts and series of facts without falsifying that method by prejudgments concerning the inmost nature of these facts or the metaphysical significance of the same.

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From M. TH. WECHNIAKOFF we have a collection of posthumous studies collected by M. Petrucci, in which the Russian author with biographies and memoirs in his hand directs his attention to the *fixity* and the *variability* of a given mental type; to the duration of the conservation of this type in its integrity; to the cases of successful "doubling" which may be presented; to the decadence of co-ordinate complex types; to the non-heredity of originality of the same type; in brief, to the phenomena of comparative biology and pathology.

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From M. LE DANTEC we have *Lamarckiens et Darwiniens, discussion de quelques théories sur la formation des espèces*, a work of great interest in which M. Le Dantec, who has taken a foremost place among embryologists, passes in review questions relating to the problem of the formation of the species, criticising the solutions that have been proposed; also the problems relative to the heredity of acquired characters, in favor of which he adduces proofs; also the problems relative to mimicry, as considered in the doctrines of Lamarck and Darwin, where the phenomena of imitation are differently interpreted; and finally, the problems relating to the bio-chemical theory of heredity, which is that of the author himself and with which our readers are already acquainted.

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M. ÉMILE FERRIÈRE has given us *La doctrine de Spinoza*, which contains the philosophy of Spinoza so condensed as to enable us to seize at a glance the details and the general features of Spinoza's theory, accompanied also with explanatory and critical comments, a well-made compendium in fine, and capable of rendering good service.

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From M. TOPINARD we have a book entitled *L'Anthropologie et la science sociale*, (Paris, Masson), well known to the readers of this

review in its English translation and appearing in French with copious appendices. From the late A. SPIR, the distinguished Russian philosopher, comes a posthumous work bearing the title, *Nouvelles esquisses de philosophie critique*, published in French under the editorship of his daughter, Mme. Hélène Claparède-Spir, who has added to the volume a biography. I should take great pleasure in presenting here a brief study of the philosophy of M. Spir, but the leisure to do so is lacking, and I also regret only being able to mention without a word of comment or appreciation the lectures published under the title of *Morale sociale*, with a preface by M. ÉMILE BOUTROUX, of a number of men of different philosophical trainings, namely, Belot, Bernès, Buisson, Darlu, Dauriac, Delbet, Gide, Kovalesky, Malapert, R. P. Maumus, De Roberty, Sorel, and Pastor Wagner,—a collection which will enable the reader to comprehend fully the state of the ethical ideas of the time, at least in France.[1]

LUCIEN ARRÉAT.

PARIS.

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[1] All the works mentioned are published by F. Alcan.

CRITICISMS AND DISCUSSIONS.

THE INTERNATIONAL CONGRESS OF PHILOSOPHY, PARIS, 1st to 5th OF AUGUST, 1900: THE HISTORY OF ITS CONCEPTION.

Some seven years ago, the editorial department of the *Revue de Métaphysique et de Morale* announced in the following terms the existence of a new Review of philosophy:

"Within the limits of this Review, which have been designedly restricted, it "has been desired to give special prominence to the doctrines of philosophy prop- "erly so called; it has been desired, quite apart from the special sciences more or "less related to philosophy, to call the attention of the public to those general "theories of thought and conduct from which it has been alienated for a certain "period, but which have nevertheless always been, under the now decried name of "metaphysics, the sole source of rational beliefs; it has been desired not only to "follow the general movement of ideas, but also to impress upon that movement a "direction. And that direction may be tentatively defined as follows:

"Without straining the idea of philosophy, it may be said that it has always "been its boast that it proposed to ascend to the ultimate principles of knowledge, "to determine the general conditions of existence, if not of absolute existence, at "least of the reality which is accessible to us, and, finally, to seek either in the "nature of thought or in the nature of being the regulating principles of conduct. "And it may be said, restricting in a general way the domain of philosophy, that "it is distinct from every other discipline, and that within this domain philosophy "is sufficient to itself. Unquestionably, it is not a stranger to the sciences, for on the "one hand it believes it discerns in the theory of knowledge the fundamental rea- "sons for the evolution of science as well as of the form which it has finally as- "sumed in modern times; and, on the other hand, it collects eagerly the general "results to which each special science has arrived, with a view of discovering in "them the outlines of a concrete cosmology or psychology which shall confirm or "regenerate its own original conceptions. Finally, it has a marked predilection,— "the heritage of Plato and of Descartes,—the predilection of an elder sister, one "might say, for mathematical science, that grand art of inexhaustible resources "which is likewise an immediate offspring of the human mind.

"Yet philosophy is not concerned with the investigation of purely scientific "facts, even where these go by the name of psychical or psycho-physiological. It "must be stated at the outset that it does not apply facts but ideas; varying the "motto of Plato, one should like to say: 'Let no one enter here who is not a logi-"cian.'

"Likewise, philosophy is not irreligious; on the contrary, it is essentially re-"ligious. It is well known that it is to be found at the cradle of Christian dogmas, "and even in our own day it remains, as contrasted with the positive sciences, the "science of things eternal. Nevertheless, it never loses its identity nor finds its "consummation in a positive religion; it is the vestibule of no church. If philoso-"ophy also seeks 'light and peace,' it is from philosophy alone that it must ask "these blessings.

"It is not averse to association with cultivated minds; it is quite desirous of "not rendering itself illegible to educated people by the negligence or awkwardness "of its style, but it professes to speak its own language, which is perfect and com-"posed of abstractions carefully defined. To speak precisely, it is independent of "science, of religion, and of so-called common sense. It is not absolutely inde-"pendent of history, but it is a stranger to that history which considers the ideas "of thinkers as historical facts, and which is rather a species of erudition. It "troubles itself solely with the history of systems, or rather it connects itself with "history as forming a part of its own ideas. Philosophy, thus extended, has existed "for centuries. It has never been near extinction. It is a palpable error to im-"agine that Auguste Comte or any other thinker has closed the era of systems, "and that the general conditions of thought have changed suddenly in the last fifty "years. Philosophy has never ceased to exercise a more or less great, a more or "less silent, influence upon the sciences and upon beliefs, yet it has lost some of "its credit as well as some of its influence in France since the establishment of the "eclecticism of Cousin as the state philosophy. Judging from more than one sign, "it has begun to reconquer the one if not the other. In any event, it seems desir-"able and well, well for the future and well for the present, that it should make "some effort to regain its empire. The present time is a very restless one; the "very conditions of intellectual and moral equilibrium being wanting, the minds of "men are tending in different ways. Some losing confidence in thought return to "the familiar altars, or ascend the pathways of tradition, and find refuge as they "fancy in a simplified Christianity, sweet but sorrowful. Some dream of extraor-"dinary revelations, others bury themselves in special researches, and pursue like "machines without a glance aside the task begun. And yet, the ground of society "seems almost ready to rise under the action of blind and terrible forces. In the "midst of these disquietudes, between the current positivism which stops at facts "and mysticism which leads to superstitions, the light of reason is as feeble and as "vacillating as ever. It is impossible that it should ever illuminate the work of "the mass of humanity; but at least let those in whom it burns silently, like the

"lamp of laborious nights, band together; together let them fan its flame; may "they strive to make it shine brilliantly upon heights visible to all who guide their "footsteps by its light."

Such were the words that the infant Review addressed to the public. The same ideas and the same spirit presided over the organisation of the International Congress of Philosophy. It is the same work that is here pursued. The scholars and the philosophers of the entire world are asked to unite here upon the common ground of reason and of free thought. It appears that the step taken in this direction by the *Revue*, at first in France, has not been without interest for the international philosophical public, and perhaps not without profit even for the development of philosophy generally. It was considered timely therefore to give to the ideas which have just been set forth a new consecration by calling together the most eminent thinkers of Europe and America, who have always manifested their sympathy with and generously accorded their encouragement to the collaborators of the *Revue*. The occasion of the Universal Exposition was deemed a favorable one for carrying out the project of uniting these thinkers and of soliciting them to labor together without distinction of nationality or boundary in the common cause of truth and morality which appeals solely to reason as the patrimony of all those who have the form and the consciousness of man. We should attempt to produce by this, at least in the domain of speculation, a unanimity of intellects, and to give thus a sort of reality to that ideal society which is called by the beautiful name of humanity.

Undoubtedly, one cannot dissimulate all the differences which separate individual minds, much less hope to efface them; for they constitute the originality of nations, and of men, and they are one of the conditions of the progressive development of human thought,—a thought always limited. But it is believed possible, and one would like to demonstrate, that in the midst of these necessary differences there is an attitude and trend of mind common to all thinkers—an attitude and a trend which are the condition of all genuinely and sincerely disintererted research, of all science and of all morality,—the attitude and trend namely of autonomous reason and of free thought. Here it is thought the sum-total of the work of the Congress will be seen in its full light. If in addition there come from it all a firm resolution on the part of all the thinkers who take part in the Congress, of developing and supporting among the public at large, by means to be decided upon later, the spirit which is the spirit of critical reflexion, then will the reunion of the coming August have served the cause of philosophy and that of general culture.

It may now be appropriate to dwell upon the more technical reasons which justify the existence of a Congress of Philosophy by the side of the special Congresses of the special sciences more or less related to it.

According as the sciences expand and multiply, according as new branches are formed and thrown off from the old philosophical trunk, as has happened with observational psychology and sociology, it becomes more and more necessary that

speculative philosophy, while preserving its intimate contact with the sciences should propound from a critical or metaphysical point of view the general questions relating to the principles, the methods, and the unity of knowledge. On the other hand, according as our societies grow more complex and the manifestations of their economical, juridical, political, and international activities increase, it becomes more and more necessary that rational speculation should connect practice with theory, action with thought, that it should propound general questions of practical morals, and give to intellect direction and to will a rule of conduct.

Such are the characteristics which we believe we can discern in the contemporary philosophical movement, and this is why it seems so interesting to give this movement form and to consecrate it in an international congress.

To draw up a species of inventory of the philosophical investigations now everywhere pursued, to exhibit the gaps which they present in this or that country, to give advice as to the means of filling them, to endeavor to increase however little the convergences of the principal directions of philosophic thought,—such are the important results upon which it does not seem to us chimerical to count. And, on the other hand, in offering to philosophers by profession and to pure theoreticians the opportunity of meeting with moralists and with philosophers of the pulpit and of action, in effecting communications between the originators of the religious and ethical societies of France and the English and German-speaking countries respecting the development of these movements, which are making towards the establishment of a rational and secular morality independently of religious beliefs, the Congress will not, it is believed, have accomplished an altogether sterile task, while the discussion of questions of this sort will be of the highest importance, and perhaps of some actual practical consequences.

There is finally a consideration which has also its interest. A Congress like that which is about to convene affords an opportunity to the thinkers of our day of seeing and meeting one another; and this knowledge of persons cannot fail to create between them bonds of respect and sympathy, which while having their greatest value in themselves are not without influence upon the progress of truth. Very frequently scholars and philosophers are totally unacquainted with one another, and though they read one another they are mistrustful for lack of better knowledge. If permanent relations could be established between them and courteous discussions of both theoretical and practical questions begun, is it rash to hope that good will result from this mutual collaboration, and can we not divine with what consequences for humanity will be fraught this disinterested association of the best of its members, of the most eminent thinkers of the world, united for the reign of truth and for the triumph of justice?

To promote the cause of reason, both in theory and in practice, to work for the progress of science and for the welfare of humanity,—such is the idea from which the International Congress of Philosophy has emanated, and which has supported its promotors and rendered them capable of triumphing over their own per-

sonal shortcomings and the difficulties which a task of this kind involves. Thus was born the enterprise which is now presented to the philosophical public. It is their duty, if they deem it useful, to support it in a simple manner—by taking part in it.

XAVIER LÉON.

PARIS.

MORE STRANGE MATHEMATICS AND MECHANICS.

The Hon. C. H. Chase contributes to the April number of *The Monist* a comparatively lengthy reply to the criticisms that I made, in the January number, of his original way of expounding and interpreting mechanical principles and of handling mathematical formulas.

In my criticism I called attention to the fact that Mr. Chase's formulas relating to the impact of two inelastic bodies of masses m and m' involved the equality of the two masses; and, taking those formulas to apply to *any* two inelastic bodies, I proceeded to derive from them some corollaries that appeared to me most interesting and important. Now Mr. Chase informs us that he did not intend to give those formulas as being general; that he knew, and that I ought to have known, that they applied only under the assumption $m=m'$; and that I was sarcastic, my reasoning irrelevant, and one of my formulas wrong.

Without wishing to steal Mr. Chase's thunder (of which my Christian humility does not allow me to be envious), I would state that I myself thought that probably, or at least possibly, his formulas for the momentum M' and the kinetic energy E' of the system after impact were intended by him as special formulas conditioned by the assumption $m=m'$. Other considerations, however, led me to the reasonable and well-founded belief that he took those formulas to be perfectly general.

In the first place, it is not the custom of mathematicians to represent equal quantities by different symbols; and when they exceptionally do so, they never fail to explain their reasons for departing from universal usage. While Mr. Chase very distinctly stated that, for convenience, the two impinging bodies would be supposed to be moving in the same direction and sense, he did not state (and this omission could hardly be accepted as an oversight) the more important fact that the two masses would be assumed to be equal.

In the second place, he says, referring to the kinetic energies E and E' of the system before and after collision, that "we see that E and E' must *in general* be different in magnitude, and $E > E'$." (Italics mine). Now, his formulas are: $E=\frac{1}{2}mv^2+\frac{1}{2}m'v'^2$, $E'=\frac{1}{2}(m+m')\frac{(v+v')^2}{4}$; and it is an exceedingly simple question of elementary mathematics to show that, if $m=m'$, and there is any impact at all, we shall *always* have, $E > E'$.

As I thought that Mr. Chase was aware of these simple facts, and as the phrase "in general," used as he uses it, means "not always" (Webster); and judging,

besides, that he was at least tolerably familiar with the notation of a science on which he spoke with so much confidence, and on the treatment of which he generously gave some advice, I concluded that I was right in believing that the formulas he gave were to be taken as applicable in all cases. Whatever the real intention of Mr. Chase may have been, the evidence compels me to grant, without qualification, his own statement—that he "was at fault." I regret that the valuable consequences I derived from his formulas were gross errors into which I was led by assuming that a man that undertook to give *mathematical* demonstrations of the errors of great *mathematicians* was using the language and methods of *mathematics*.

Another strange thing to which I called attention was the peculiar and doubtless original manner in which Mr. Chase handled the parallelogram of velocities and the theory of work and energy; and, *à propos* of this subject, I ventured to say that he seemed to be somewhat confused. To this he answers with a dissertation on infinite forces acting during an infinitely short interval of time; he speaks of finding, by "the parallelogram of *forces*," the resultant velocity of a particle on which there is only *one* force acting, this force having besides the very natural and common peculiarity of being infinite; and, in short, he succeeds in confirming my suspicion as to the afore-mentioned confusion of ideas. And it may not be out of place here to remark that another thing that seems to have created a great deal of confusion in Mr. Chase's mind is the unfortunate old expression "quantity of motion," used in the sense of momentum (mv). I need not insist on this statement, as I *know* that any one who has read Mr. Chase's two articles and is at all familiar with mathematics and mechanics has come to the same conclusion.

Having finished his defense, Mr. Chase takes the offensive, and with as much uncharity as pride he exposes my ignorance and displays his knowledge in the following crushing sentences:

"And it will not be out of place here to call attention to Mr. Llano's error in "stating the formula for the energy of two inelastic bodies after collision. It is not "$E - \frac{1}{2}\frac{mm'}{m+m'}(v-v')^2$, as Mr. Llano states, but is accurately expressed by the more "complicated formula,

$$E' = E - \tfrac{1}{2}\left[m\left(v - \frac{mv+m'v'}{m+m'}\right)^2 + m'\left(\frac{mv+m'v'}{m+m'} - v'\right)^2\right].$$

"For a full discussion of which subject, consult Thomson and Tait's *Treatise on "Natural Philosophy*, Vol. I., pages 219–327."

I was much grieved at having allowed, as I thought, my habit of using practical and approximate formulas to lead me into the serious blunder of producing them in a purely scientific discussion, without first consulting Thomson and Tait's formidable treatise (which I had within reach of my arm when I was putting that gross error on paper). I hoped, however, that, after all, my error might prove to be what engineers call inappreciable for practical purposes, and that I might answer Mr. Chase by charging him with what the same gentlemen contemptuously

call theoretical hair-splitting. In this hope, I handed "my" formula and the formula derived by Mr. Chase from the investigations of Thomson and Tait (*Treatise on Natural Philosophy*, pp. 219–327!) to my assistant (a young girl just out of the high school), for her to determine, if she could handle so complicated a formula, to how much my error amounted. And what was my surprise when, on simply glancing at the two formulas, she told me that they were one and the same thing, and that, by a little factoring and canceling that could be done mentally, Mr. Chase's "complicated" formula could be transformed identically into "my" formula!

This, besides other very obvious facts, convinced me that the best thing I might do would be to abstain from continuing a discussion from which the readers of *The Monist* will derive neither pleasure nor instruction; while, so far as I am concerned, I am confident that it will bring me neither pleasure, instruction, nor glory.

ANTONIO LLANO.

SCRANTON, PA.

THE CHINESE TREE OF LIFE.

The Rev. Tan Tek Soon, a Chinese priest and a sinological scholar of repute, writing from Singapore and referring to the editorial article on *The Food of Life and the Sacrament* in the January and April *Monists*, adds the following comments concerning Chinese beliefs suggestive of the tree of life, the apples of the Hesperides, and kindred legends:

"So far as the Chinese are concerned it is the *t'o* (*prunus Persica*) or the peach which is regarded by their legendary lore as the usual 'fruit of the immortals.' The whole plant has thus a great significance both mythological and mystical. The fruit itself is the emblem of longevity and is thus a conventional symbol in all their arts. In necromancy the magic wand must be a branch of the peach-tree. The pinkish hue of its flowers gives the name to the most lucky of their colors, the *t'o hung*. Its importance is somewhat related to the *T'ai yang* of Chinese metaphysics, the sun or male-principle which is therefore viewed as the source of all life. There are also several stories of the theft of this fruit in Chinese legends, the most popular being that of Sun Wu K'ung, the monkey companion of the Chinese pilgrim Hien-tsung in the Siyuki novel. Stories of mythic heroes' having been born from a peach-fruit or of their mothers' having eaten of the fruit just before their births are also quite common."

BOOK REVIEWS.

ANSCHAUUNG UND DENKEN IN DER GEOMETRIE. Akademische Antrittsvorlesung, gehalten am 22. Juli 1899. Von *Otto Hölder*, O. Professor der Mathematik in Leipzig. Leipzig: Druck und Verlag von B. G. Teubner. 1900. Pages, 75. Price, 2.40 Marks.

A thorough study of the methods of ratiocination employed in mathematics, mechanics, and the exact natural sciences has led Professor Hölder to the conviction that the deductive method there employed is made up of series of concatenated conclusions of quite characteristic form, and that consequently these sciences have a peculiar method and logic of their own. Not that the reasoning in these sciences is absolutely different from the reasoning in other departments of thought and life; the peculiarity in question resides entirely in the nature of the subject-matter and in the style of the combinations of the intellectual acts concerned.

A correct philosophy of mathematical procedure is to be reached, in Professor Hölder's opinion, only by the coöperation of mathematicians and philosophers, and not, as has been heretofore the case, by isolated and one-sided labors in this domain. The review which he himself gives of the modes of thought concerned is a very good one, and taken together with the exhaustive notes which he has suffixed to his discussion, will be found to be of assistance to students. He carefully distinguishes between the rôles which pure imagination (*Anschauung*) and pure thought play in geometry, and discriminates nicely between axioms of logic and axioms of experience. The arguments of the Kantians and the empiricists (the "physical geometers") are also examined.

Professor Hölder finds that there are involved in geometrical demonstration many elements which usually remain unemphasised in the formal proofs; for example, the auxiliary lines used in constructions involve what he calls *existentia-propositions*, namely, propositions asserting the possibility of the constructions in question. These existential propositions enable us so to vary the figure which we are considering that in the working out of a geometrical proof we are virtually performing an intellectual experiment quite after the fashion of natural experiments; and this is deduction. Further, the eye performs a distinct rôle in the succession of acts necessary to the constructions of the proof, as when we observe, for in-

stance, that a certain three angles together make two right angles. Again, the demonstration is carried out in connexion with a single typical figure which must be considered movable and to occupy all possible positions if the deductions are to be universally valid, and in this manner the demonstration is said always to involve an *inference from analogy*. Further, *axioms of arrangement* or *disposition*, as Hilbert has termed them, are involved. These and similar subsidiary implications are largely visualistic in character, and the question arises as to how far they may be stripped of their visualistic elements and reduced to purely rational forms. Leibnitz believed he could reproduce by symbolism all the elements involved in the visualistic procedure, but for various reasons Professor Hölder is of the opinion that this is possible only for limited domains. He next considers the doctrine of proportion, and seeks to analyse the assumptions therein involved, one of which he finds to be the axiom that certain geometrical operations can be repeated an indefinite number of times. The idea that the contents of figures of different forms are comparable is in his opinion also in need of demonstration. Considering the method of exhaustions, he concludes that it is impossible to banish indirect demonstrations from geometry, and he is also of the opinion that the demonstrations of mechanics are not essentially different from those of mathematics, inferences from experience and analogy being involved in both, though in varying degree. μ.

IMMANUEL KANT'S KRITIK DER REINEN VERNUNFT. Edited by *Benno Erdmann*. Berlin: Druck und Verlag von Georg Reimer. 1900. Pages, xii, 609. Price, 4 marks.

BEITRÄGE ZUR GESCHICHTE UND REVISION DES TEXTES VON KANT'S KRITIK DER REINEN VERNUNFT. Anhang zur fünften Auflage der Ausgabe. By *Benno Erdmann*. Berlin: Druck und Verlag von Georg Reimer. 1900. Pages, 115. Price, 2 marks.

KANT'S CRITIQUE OF PURE REASON. Translated by *F. Max Müller*. New York and London: The Macmillan Co. 1896. Pages, lxxxii, 808.

The fifth edition of Prof. Benno Erdmann's exemplary edition of Kant's *Critique of Pure Reason* is based (1) on a new and thorough collation of the two first original editions, (2) on a thorough collation of the second edition with the third, fourth, and fifth editions in some places, and (3) on a comparison of the second edition with the third, and the fourth with the fifth, in all passages in which the text of the editions subsequent to 1838 gave occasion for suspecting the text of the standard second edition. The great care and labor which Dr. Erdmann has bestowed upon his work sprang from the conviction that previous editors and emendators had erred in two not unessential points. Every editor since Rosenkranz has religiously kept on modernising the text, changing the punctuation and orthography, and even the words of the text. The result has been a rather chaotic con-

dition of things, and even some of the editions which have a very high reputation contain emendations which are entirely foreign to Kant's mode of thought and expression. It may be of interest to note that the well-established tradition of regarding the fifth edition, which was the last that appeared during Kant's lifetime, as authoritative and of special importance has been set aside by Professor Erdmann, who takes pains to show that many errors have crept into all the editions subsequent to the second. But it was the fifth edition that Rosenkranz and Hartenstein, as well as Von Kirchmann, Adickes, and Vörlander fathered either altogether or in part. Dr. Erdmann for his part has gone back to the second edition, and to give some idea of the enormous extent of his labors it need only be said that he has indicated in a special volume printed as an appendix to the main work, and above noted, all the most important variations in the readings and emendations of the other chief editors, and that he has incorporated in an extensive series of footnotes in the work itself the results of his own textual and critical researches. His labors will, in a large measure, supplant those of his predecessors. The volume is, for its size, remarkably cheap.

Prof. Max Müller's English translation of the *Critique*, the second edition of which appeared some four years ago in this country, will be a valuable companion-piece to the German edition of Erdmann. It is a handsome volume, too well known to need comment, and should be accessible to all students. We miss the introduction of Noiré, but that has since been independently published in German. *μ*.

A Brief History of Mathematics. An Authorised Translation of Dr. Karl Fink's *Geschichte der Elementar-Mathematik*. By *Wooster Woodruff Beman*, Professor of Mathematics in the University of Michigan, and *David Eugene Smith*, Principal of the State Normal School at Brockport, N. Y. Chicago: The Open Court Publishing Co. 1900. Pages, xii, 333. Price, cloth, $1.50 net (5s. 6d. net).

Fink's *History of Mathematics* differs in several essential respects from existing English compendia. It is not biographical, it is not a collection of anecdotes of the great mathematicians, nor is it concerned with mathematical history as an integral portion of the general history of civilisation. It is rather a purely logical and systematic exposition of the evolution of the science, considered as an independent and organic whole, as a self-sufficient body of truth, developing along well-defined lines of its own, and having a perfectly definite physiognomy. Much has been gained in an economic respect by this mode of treatment, and it is sufficient to say that Fink's work contains within brief compass and at less cost more that really relates to the substance of mathematical history than any other work of like pretentions now in the field.

It is unnecessasy to comment upon the advantages that redound to mathematical instruction from a study of the history of mathematics. "The clearer view of the science that is afforded the teacher, the aspiration to improve his methods of

presenting it, the increased interest in the class work, the tendency of the subject to combat stagnation of curricula," are, as the translators well remark, a few of the reasons that speak potently in its behalf. To the professional student a knowledge of it is absolutely indispensable to a correct conception of the present problems and status of his science as well as to a correct forecast of its potential future development; while to the philosopher and to the historian of science it is of more intensive value than the thoroughest acquaintance with the pure technique of any one of the mathematical disciplines in their present form. Here science is exhibited in its purest form, and the genesis of knowledge shown forth in its ideal types.

Fink has differentiated the history of the separate branches of mathematics in his treatment. He considers arithmetic, algebra, geometry, and trigonometry singly, carrying the historical development considerably beyond the limits of the ordinary undergraduate collegiate course. He takes up arithmetic first, considering in succession the development of number-systems and number-symbols among the Egyptians, Babylonians, Phœnicians, Greeks, Romans, Hindus, Arabs, and mediæval Europeans, discusses the development of the mechanisms and methods of computation, in the various forms of finger-reckoning, the abacus, etc., among the Romans, the Greeks, the Hindus, and their European successors; traces the development of the four species and their perfection, the arithmetic of fractions, the invention of decimals, etc., concluding with a consideration of the various phases which applied arithmetic has assumed in its modern developments. Algebra is considered next. Beginning with a survey of the general symbolism and the meagre operational signs which existed among the Egyptians, the Greeks, the Romans, the Hindus, the Chinese, and the Arabs, he traces the development of the embryonic theory of equations from Ahmes, the Pythagoreans, Archimedes, Eudoxus, Euclid, and Diophantus, through the works of the Hindus and the Arabs, to the epoch of the great Italian investigators of the sixteenth century and to their German and French successors of the period succeeding. This latter period is full of interest to the teacher and the student of elementary mathematics, who can study here in detail and with wonderful enlargement of insight the development of the marvellously economical notation and symbols of operations which now serve to abridge and illumine his labor. These men worked only with the meagerest elements of algebraical symbolism, and not only, for example, were the solutions of cubic equations obtained without so much as the sign for equality, but logarithms even were invented before the introduction of exponents, which now facilitate so much their comprehension.

The modern period begins with the founding of the great academies and the introduction of modern algebraical symbolism by Vieta, Harriot, Wallis, and Descartes. Pascal, Newton, and Leibnitz follow, with the invention of the Calculus and the development of the same by Euler, Lagrange, and the great modern mathematicians. Simultaneously, the development of the theory of numbers and the purely formal algebra is considered from the days of Fermat to the periods of Gauss,

Grassmann, Hamilton, Dirichlet, and Dedekind. Finally, geometry and trigonometry are taken up. The beginnings of geometry among the Egyptians and Babylonians, its golden age in Greece, its dormancy among the Romans and their successors, its renaissance under Vieta, Kepler, Cavalieri, Roberval, Fermat, and notably under Descartes, its advancement by Pascal and Newton, the foundation of modern geometry by Monge, Carnot, Poncelet, Chasles, Mobius, Plücker, Steiner, and Von Staudt are the towering points of this development. Lastly, non-Euclidean geometry receives consideration.

As will be apparent from the preceding brief *résumé*, the work subserves in an eminently satisfactory manner the requirements of both practice and theory. For the biographical matter, which is common in the usual histories, but here omitted, an appendix of biographical notes alphabetically arranged has been substituted. The book has a thorough index, and it only remains to say that the work of the translators has been conscientiously and skilfully performed. *μ.*

GESCHICHTE DER PHYSIKALISCHEN EXPERIMENTIERKUNST. By *Dr. E. Gerland* and *Dr. F. Traumüller*. Leipsic: Verlag Wilhelm Engelmann. 1899. Pages, xvi, 442. Price, 14 marks.

For real intrinsic fascination, the history of the art of physical experimenting far surpasses that of the development of physical ideas; it is palpable and concrete, and so indissolubly connected with the history of the industrial arts and of material civilisation as to command the interest even of sociologists and of practical men, while certain theatrical features are not lacking to it that will compel the attention of even the general reading public. The present work by Dr. E. Gerland, professor in the Royal Mining Academy of Klausthal, and Dr. F. Traumüller, of the Nikolaigymnasium of Leipsic, both of whom are known for their labors in the history of science, will be found to subserve in an admirable manner the requirements which so extensive and important a task impose. It describes the ways by which physics has reached its present perfection, and portrays the mechanism and mode of operation of the instruments which have promoted its progress. The book is filled with reproductions of apparatus from the original editions of the great physicists, and with drawings of famous apparatus that have been preserved. Where possible, the descriptions also have been taken from the original works. In this manner, the authors believe that they have brought to light much that was unknown or forgotten. The history of the art of physical experimentation in antiquity, beginning with the Babylonians and Assyrians and ending with the Romans and the later Alexandrians, is passed in review, and many curious and ingenious instruments described, of the existence of which few people have the slightest idea. The Eastern Greeks and the Arabs then receive due notice, and the Middle Ages, the Renaissance, and the sixteenth century, which brought forth the works of Porta Gilbert, Leonardo da Vinci, and Stevinus, are afterwards considered. The period of Galileo, Kepler, Huygens, Newton, and Leibnitz, which overshadowed all the

centuries that preceded and even that which followed, receives of course the lion's share of the authors' attention, and offers most that is important and stimulating. Here modern science is embryonic and here its genius took its greatest leaps. The experimental art of the seventeenth century and the first part of the eighteenth found its Justinian in the celebrated Dutch physicist, 's Gravesande, from whose works a great number of the descriptions and illustrations of physical instruments have been taken. The apparatus of the present modern period have been embodied in the work only in a slight degree and in so far as they have been determinative. This is especially true in the department of electricity. Whatever may be regarded as ephemeral or can be found in the text-books has been omitted. Considerable credit is due to the publishers on the score of the illustrations, which are very numerous, and which must have been collected at considerable expense. *μκρκ.*

THE ELEMENTS OF PHYSICS. For Use in High Schools. By *Henry Crew*, Ph. D., Professor of Physics in Northwestern University. New York: The Macmillan Co. 1899. Pages, xiii., 347. Price, $1.10.

There are several notable points to be remarked in Professor Crew's new elementary text-book of physics. He has endeavored to treat his material not as a series of disconnected subjects in which mechanics, sound, light, heat, and electricity occupy isolated places (a division which is based rather upon the geography of the body than on reason), but as a body of *organised and rational truth forming a single great whole.* He has also injected rigor into his book without sacrificing naturalness,—qualities which most text-book writers in their wild endeavor after artificial simplicity seem to miss altogether.

We learn immediately from Professor Crew's opening definition that his view of physical science is that of the so-called mechanical philosophy, according to which the phenomena of nature are reducible to motion. In accordance with this principle the subject of motion is first considered. Elementary vector analysis is introduced from the start, and the consideration of directed quantities is carried in a very satisfactory and fruitful manner throughout the entire work. This in itself is a decided gain. We have in the second chapter a discussion of simple harmonic motion; in the third, a discussion of the general properties of matter, inertia, mass, force, work, energy, gravitation, elasticity, which are lucidly and concisely treated; in the fourth, a treatment of the special properties of matter, where the properties of liquids and gases are treated; in the fifth, a very clear and pregnant discussion of the theory of wave-motion which is made the foundation of the best part of the chapters on sound, heat, magnetism, and light that follow. The author has throughout endeavored to appeal to the existing stock of experience of his pupils, which he believes offers an adequate foundation for a rational superstructure of physical knowledge, and he has also aimed to make his treatment the treatment of naturally developing thought. The fundamental conceptions are rigorously and concisely defined, and form in this respect a sharp contrast to the logical looseness

and surplusage which infects so many of our school text-books. In typography and in the matter of intelligent and neatly executed diagrams the book leaves little to be desired. μ.

DIE ANALYSE DER EMPFINDUNGEN UND DAS VERHÄLTNISS DES PHYSISCHEN ZUM PSYCHISCHEN. By *Dr. E. Mach*, Professor in the University of Vienna. Vienna: Verlag von Gustav Fischer. 1900. Pages, vii, 244.

The first edition of this small but valuable work, which in our judgment contained as many original ideas, investigations, and suggestions for further research as any book of its size in psychological literature, appeared fourteen years ago. Its function, as modestly indicated by its author, who is by profession a physicist, was solely that of an *aperçu;* but to judge from the influence which it has exerted it may be considered to have fulfilled a far loftier mission. The author is aware of the great strides which experimental psychology has taken since the original appearance of the work, but he has wisely avoided the temptation of incorporating the results of that research into the second edition of his book, and has rightly preferred to let it stand in nearly its original form, with the addition of a few supplementary chapters designed to explain his position with reference to the controversies which have since then arisen concerning the main problems of psychology and methodology. One of these chapters appeared in 1897 as an appendix to the English translation of his book; the second discusses his intellectual relationship to Avenarius, which has recently been a subject of frequent comment on the part of Avenarius's pupils; the third is concerned with the relations of physics and biology (causality and teleology); the fourth is on the will, and the fifth on sensation, memory, and association. We believe that these new discussions, in so far as they touch upon moot points and are not apologetic, will be stimulative to psychological thought in no less a degree than their predecessors, and that the value of the little book has been increased by them. μ.

EBENE UND SPHÄRISCHE TRIGONOMETRIE. By *Dr. F. Bohnert*, Hamburg. Leipsic: G. J. Göschen'sche Verlagshandlung. 1900. Pages, viii, 160. Price, bound, 2 marks.

EBENE GEOMETRIE DER LAGE. By *Dr. Rudolf Böger*, Professor in the Johanneum, Hamburg. Leipsic: G. J. Göschen'sche Verlagshandlung. 1900. Pages, x, 289. Price, bound, 5 marks.

We noticed in the last number of *The Monist* the first volumes of the new mathematical series conducted under the editorship of Professor Schubert, of Hamburg, and we have now to call attention to two new issues, namely, Dr. Bohnert's *Plane and Spherical Trigonometry* and Dr. Rudolf Böger's *Plane Geometry of Position*. Dr. Bohnert's work is a concise and clear exposition of the elements of plane and spherical trigonometry, made on the traditional pattern, but avoiding not a little of the conventional rubbish and strongly emphasising methodological

and logical points of view. The development of spherical trigonometry is carried out along lines parallel with the development of the principles of plane trigonometry, special effort having been made in this direction to attain the economical advantages afforded by a systematic and orderly whole. The neatness of the figures and the clearness and contrasts of the typographical arrangements will add not a little to the usefulness of the book; while the frequent applications of trigonometry to geometry and the occasional use in the proofs of the geometry of circles of a triangle will afford acceptable hints to teachers who desire to vary and improve their methods of instruction. The examples are not numerous, but they are well chosen and admirably exhibit the wide range of applicability of trigonometry. Special attention has also been paid to the relative value of the different methods of trigonometrical computation,—a point generally neglected in text-books.

Dr. Böger's *Geometry of Position* is a compact and solid treatise based in the main on the systems of Von Staudt and Reye, but supplemented by the conceptions of Thomae and the independent investigations of the author himself, who has substituted for Von Staudt's theory of imaginary elements a theory of his own, rendering a distinction between real and imaginary cases unnecessary. It is a good introduction to the geometry of position, rigorous and complete. *μ.*

ELEMENTE DER EMPIRISCHEN TELEOLOGIE. By *Paul Nicolaus Cossmann*. Stuttgart: A. Zimmer's Verlag (Ernst Mohrmann). 1899. Pages, 132. Price, 4 Marks.

This book gives a good survey of certain problems now engaging the attention of epistemologists and students of scientific method. The subject-matter of the empirical sciences is defined by the author to be the *necessary connexions* subsisting between things. These necessary connexions are called natural laws. The subsumption of any group of events under a law is called the explanation of that group of events, and so with the subsumption of a special law under a more general law. The author proceeds analytically; he finds the empirical sciences to be preponderantly causal sciences (ætiology), and identifies the theory of science with the theory of causality. The universality of causality is for him the foundation of all scientific research. He then gives a general formulation of the law of causality according to which every phenomenon is conceived to have a functional connexion with some part of its antecedents, which part is called the cause. The law takes thus a mathematical form, and causes and effects are conceived as values of abstract magnitudes, which magnitudes are constant in the case of individual isolated causal laws, but are in turn themselves values of two variable quantities—general cause and general effect—as soon as the totality of the causal law is considered. This is a little in the air, and many minor points that the author makes may seem similarly far-fetched. The bulk of the work is devoted to an analysis of biological experience with a view to ascertaining whether biological phenomena are involved without residuum in the causal complexus. Teleology, in the author's

conception, appears to be merely necessary conformity to law—a functional relation between antecedent and consequent, and that such a relation exists in the biological domain is in his mind, as it is in the minds of most inquirers, beyond the shadow of a doubt. *p.*

MONISTISCHE GOTTES- UND WELTANSCHAUUNG. Versuch einer idealistischen Begründung des Monismus auf dem Boden der Wirklichkeit. Von *J. Sack*, Leipzig: Verlag von Wilhelm Engelmann. 1899. Pages, viii, 278. Price, 5 marks.

After briefly tracing the monistic aspirations which shone through the avowed dualism of Kant and his followers, and characterising the monistic conception of things as the shibboleth of modern science and the philosophical signature of our times, the author, accepting its principles, seeks in his turn for a solution of the problems of existence. Discovering that it is denied to us to attain to a knowledge of the suprasensual either by the aid of logic or of scientific investigation, he resorts after the precedent of Schopenhauer to the analogical procedure and discovers in the human soul, or rather in its distinctive characteristic, consciousness, the analogue for the explanation of the universe. The author is aware that he is not attaining by his procedure a knowledge of things-in-themselves, but he is convinced that if he can exhibit in the universe at large the attributes of consciousness, if he can establish the identity of the phenomenon with the noumenon, and come ultimately to the recognition of divinity as the fundamental essence of both, then we shall have arrived, both in theory and in fact, as near as we possibly can to the knowledge which has been so long sought. His ultimate aim is thus the establishment of a theory of God and of the world, that is to say, of a religious system, involving a distinct doctrine of the development of the universe, of man, and of man's soul. His doctrine culminates in the theory of a personal God, conscious of his divine nature, but identical with the cosmos. He asserts that there is no contradiction between this and the monistic position, his definition of personality being nothing but the predication of self-consciousness and of immanency. While we are at variance with the author upon this and other related points, there is much in the book that agrees with the position upheld by *The Open Court* and *The Monist*. *μ.*

THE PROPHECIES OF JESUS CHRIST RELATING TO HIS DEATH, RESURRECTION, AND SECOND COMING, AND THEIR FULFILMENT. By *Paul Schwartzkopff*, Professor of Theology in Göttingen; translated by Neil Buchanan. Edinburgh: T. & T. Clark. 1897.

The characteristic feature of Professor Schwartzkopff's treatise lies in his distinction between what belongs to the absolute divine content of Jesus's revelation, and what to its form as conditioned by His humanity and the opinions of His day.

The elaboration of this distinction belongs to certain portions of his work which he has not yet published, but the conclusions are used in the present volume which constitutes really the last quarter of a more extended treatise.

The divine content of Jesus's revelation was the fatherhood of God, involving redemption through love from sin, and final reunion with the Father. The form of his revelation consists of the precise data of Christ's expectations regarding his resurrection, his ascension, and the establishment of the kingdom of God on earth. In all these his fallible human mind was the instrument of reaching conclusions, and we find him subject to the preconceptions and the errors of his time.

Professor Schwartzkopff finds that Jesus expected to go directly on his death to be with God in heaven, whence he expected to return in glory within the life of the generation then living to establish the kingdom of God on earth. That His spirit went to God the author devoutly believes, but the establishment of the kingdom of God on earth was to come about in a different way from what He expected. This was a part of the form of his revelation, however, and not of its essence.

As to the appearances of Christ after burial, this is Professor Schwartzkopff's position: The disciples and Paul certainly had a supernatural revelation which confirmed their belief that Jesus had been transfigured and exalted to God; this may have been merely "an objective vision," or Jesus may have appeared, and probably did, in a celestial body, for we cannot deny the possibility of such an appearance. We cannot at all accept the possibility that the physical body of Jesus was reanimated and walked the earth, and the argument from the empty tomb is met by the assumption that some unknown persons stole away the physical body from superstitious motives. Christ's promise that he would appear to his disciples "after three days" is not to be taken literally; "three days" means only a short time.

Professor Schwartzkopff insists upon the humaneness of Jesus from his mental side, but, while he insists no less upon his moral and spiritual perfection, he does not make it clear whether this too is regarded as human, or as something essentially superhuman. The puzzling intricacy of the mentally fallible and the spiritually infallible natures involves the author in some fine scholastic distinctions which are clear only to those who hold his precise point of view. Despite great erudition and the evident purpose to weigh fairly the arguments of others, which are sometimes considered at length, and despite the assumption of the critical point of view there is in the volume an anxious desire to make the conclusions square with a certain preoccupied theological position,—a fairly liberal position for an orthodox theologian, it must be admitted.

It would be interesting to have a treatment of this subject from an absolutely unbiased point of view, if that is possible. Probably it is not possible from one who still stands upon the evangelical platform. The only way in which preconceived notions regarding Christ and his authority can be eliminated is to apply the argument and the tests of opinion to some known person of modern times in circumstances as nearly as may be the same. How would we judge of a known per-

son of our day of whom reports were made similar to those given us in connexion with the life of Jesus? W. H. C.

PSYCHOLOGY AND LIFE. By *Hugo Münsterberg*, Professor of Psychology in Harvard University. Boston and New York: Houghton, Mifflin and Company, The Riverside Press, Cambridge. 1899. Pages, xiv, 286. Price, $2.00.

Two of the essays included in this volume are already well known to the public and gave rise a year or so ago to much discussion—a good fortune that seems to have marked more than one of Professor Münsterberg's recent deliverances. These essays are entitled, "The Danger from Experimental Psychology" and "The Teacher and the Laboratory," and appeared in *The Atlantic Monthly*. They are an attack on the psychological fad which now enthralls our educational thought, or lack of thought, and are reprinted as supplementary interpretations of his educational views. The other six essays are entitled: (1) Psychology and Life; (2) Psychology and Physiology; (3) Psychology and Education; (4) Psychology and Art; (5) Psychology and History; and (6) Psychology and Mysticism.

With most men who have kept their eyes open during the last ten years Professor Münsterberg believes that intellectually we are suffering from a species of psychological plague. He says: "The period of psychology, of the natural science of the mental life, has begun. It dawned ten, perhaps fifteen years ago, and we are living in the middle of it. No Edison and no Röntgen can make us forget that the great historical time of physics and physiology is gone; psychology takes the central place in the thought of our time, and overflows into all channels of our life. It began with an analysis of simple ideas and feelings, and it has developed to an insight into the mechanism of the highest acts and emotions, thoughts and creations. It started by studying the mental life of the individual, and it has rushed forward to the psychical organisation of society, to social psychology, to the psychology of art and science, religion and language, history and law. It began with an increased carefulness of self-observation, and it has developed to an experimental science, with the most elaborate methods of technique, and with scores of great laboratories in its service. It started in the narrow circles of philosophers, and it is now at home wherever mental life is touched. The historian strives today for psychological explanation, the economist for psychological laws; jurisprudence looks on the criminal from a psychological standpoint; medicine emphasises the psychological value of its assistance; the realistic artist and poet fight for psychological truth; the biologist mixes psychology in his theories of evolution; the philologist explains the languages psychologically; and while æsthetical criticism systematically coquets with psychology, pedagogy seems ready even to marry her."

The solution Professor Münsterberg sees only in absolute divorce. He says again: "The chief aim of this book is the separation of the conceptions of psychology from the conceptions of our real life. Popular ideas about psychology suggest that the psychological description and explanation of mental facts expresses the

reality of our inner experience. It is a natural consequence of such a view that our ethical and æsthetical, our practical and educational, our social and historical, views are subordinated to the doctrines of psychology. These papers endeavor to show that psychology is not at all an expression of reality, but a complicated transformation of it, worked out for special logical purposes in the service of our life. Psychology is thus a special abstract construction which has a right to consider everything from its own important standpoint, but which has nothing to assert in regard to the interpretation and appreciation of our real freedom and duty, our real values and ideals. The aim is thus a limitation of that psychology which wrongly proclaims its results as a kind of philosophy; but this limitation, which makes the traditional conflicts with idealistic views impossible, gives at the same time to the well-understood psychology an absolute freedom in its own field, and the whole effort is thus as much in the service of psychology itself as in the service of the rights of life."

And this point of view the Professor then applies to our public life, our education, our art, and our science. The application is self-confessedly pugilistic: he aims, he says, not to amuse, but "to fight," believing even as a psychologist that the "critical examination of the rights and limits of a science is the chief condition for a sound and productive growth." μ.

THE MAP OF LIFE: CONDUCT AND CHARACTER. By *William Edward Hartpole Lecky*. New York: Longmans, Green & Co. 1899. Pages, xiv, 353. Price, $2.00.

Coming from the pen of a distinguished historian and a man of wide practical experience in ethical and political affairs, this book of Mr. Lecky will be welcomed by the reading world as containing every promise of a sound contribution to the doctrine of right conduct in life. Mr. Lecky is not a doctrinaire nor a philosopher; he is rather a practical moralist, who, taking for his guidance the broad pragmatic teachings of history and of science, would steer the ship of life skilfully and conscientiously among the rocks, reefs, and wrecks of conventional dogmas, leaving it safe at last in the haven of that most dreamless of sleeps, death, with duty done, sorrow avoided, the future provided for, and the inevitable acquiesced in. It is in fact the practical philosophy of the Anglo-Saxon race that is presented here, with certain softening admixtures from the South. The task has been beautifully done, and with a wealth of pertinent illustration that few men could command; and while it savors in places of the spirit of compromise, and leans at times towards agnostic views of certain final problems, the rigorously freethinking, as well as the rigorously orthodox, reader may be expected to bear in mind that Mr. Lecky is writing to enhance the general moral value and tone of life, and not to enforce scientific or philosophical opinions. We append the titles of some of the subjects treated in his very readable book: The nature of happiness in history and theory; The general rules of happiness; The relation of morals to happiness;

The change of morals in history; Ideals; Duty; Moral judgments; The good and evil nature of man as exemplified in history; Compromises in war, law, politics, and religion; The ethics of the statesman; The management of character; Money, Marriage; Success; Time; and Death. *p.*

THE SCIENTIFIC BASIS OF MORALITY. By *G. Gore, LL. D., F. R. S.* London; Swan Sonnenschein & Co. 1899. Pages, viii, 599.

The relations of science to morality has been a favorite subject with Dr. Gore, and the present voluminous work is the culminating expression of his studies in this field. "Its leading object is to show in a general way that the entire conduct of man—physical, mental, and moral—is based upon a scientific foundation; to make clear the truth that the great powers and laws of science are the chief guides of life; to show that universal energy acting according to law is the true 'divine' power governing physical, moral, social, and religious conduct; and to illustrate the influence of science upon the material, mental, and moral progress of mankind." It is impossible to give an idea of the enormous amount of scientific opinion which has been digested in this work; it is sufficient to say that few points of view have been left undiscussed, and that the ethics of naturalism here finds its fullest expression. *p.*

DREAMS OF A SPIRIT-SEER. Illustrated by Dreams of Metaphysics. By *Immanuel Kant*. Translated by Emanuel F. Goerwitz, and edited, with an Introduction and Notes, by Frank Sewall. London: Swan Sonnenschein & Co., New York: The Macmillan Co. 1900. Pages, xiv. 161. Price, 2s. 6d.

Kant's *Träume eines Geistersehers*, or, as the title is here translated, *Dreams of a Spirit-Seer*, is now generally acknowledged to have been "a humorous critique aimed chiefly at the philosophers of his day, using Swedenborg as a convenient because non-combative and comparatively unknown mark for his blows." According to the editor of this little book, who cites the investigations of Vaihinger, Heinze, and others, Kant is indebted to Swedenborg for the conception of his famous *mundus intelligibilis*, as well as for the basis of the positive idealism set forth in his *Critique* and his *Religion innerhalb der Grenzen der reinen Vernunft*. We should not go as far as the editor in citing as evidence of conscious plagiarism on Kant's part his instruction to Tieftrunk not to include in the edition of his collected works writings earlier than 1770, thus excluding the *Dreams*. Whatever Kant's leanings toward mysticism may have been, they are not necessarily of Swedenborgian origin. We are glad of this translation, nevertheless, as it revives interest in an interesting episode in the history of philosophy. Through the labors of the editor we have in addition to the translation a citation of the passages in Swedenborg by which Kant's chief mystical points of view are supposed to have been suggested, as well as a digest of the recent utterances of German and other philosophers on the subject of Swedenborg's influence upon Kant. *m.*

DER MENSCHHEITBUND. Nebst Anhang und Nachträgen aus dem handschriftlichen Nachlasse von *Karl Chr. Fr. Krause*. Herausgegeben von *Richard Vetter*, Schuldirektor in Dresden-Löbtau. Berlin: Verlag von Emil Felber. 1900. Pages, 501. Price, 9 marks.

Krause lived in the early part of this century, was a voluminous writer and thinker of merit, but is little known and little studied even in Germany. His best known disciple was the famous jurist and political scientist, Ahrens, and it seems that at present the greatest number of his adherents are in Spain. Krause's great work, *Philosophie des Rechts*, is justly celebrated, and it is claimed for it by its editor that no similar system is so well adapted to solve the difficulties of the present social crisis. Logic, mathematics, philosophy, political science, freemasonry and music were a few of the subjects on which he wrote, but the *Menschheitbund*, according to Vetter, was the ideal of his life and that on which he worked most unremittingly. It is the ideal organisation of human society, conceived as a loving, brotherly and sisterly, organic whole. In the present book, which is a collection of posthumous fragments, the constitution, mode of life, and ideals of this society are worked out in great detail and with the insight of a keen and sympathetic observer of humanity. The only drawback to the work is Krause's esoteric style and esoteric method. As a specimen of it we quote his re-formulation of the Lord's Prayer, which he calls the *Wesenvergeistigung des Vaterunsers*. It will also reveal, perhaps, to those who may understand it, the peculiar trend of his religious and humanistic aspirations:

"1. Wesen!

"Unser Urwesen, das Du mit Dir als der Wesengliedbau wesendem Wesen, vereinwesest und vereinlebst!

"Deine Wesenheit werde geinniget, geschaut, gefühlt, geliebt, gewollt, dargelebt.

"Dein Wesenleben werde mit unserem Wesenleben vereingebildet.

"Dein Wille werde (also: 'wird' und 'werde') volldargelebt (vollführt), wie im Wesengliedbau in der Einen unendlichen Zeit, und in jedem Wesen-Theilgliedbau zu dessen Vollzeit, also auch in dem Erd-Wesengliedbau und in den Wesenleben-Gliedbau dieser Erdmenschheit.

"2. Unseres Wesenlebens Bedingheit gieb uns zeitkreisig und lebaltergemäss,

"Befreie uns lieberbarmend von unserer eignen Wesenlebwidrigkeit, die wir gegen Dich haben und hilf, dass auch wir lieberbarmend unsere Mitmenschen und ein Jeder sich selbst, befreien helfen von der Wesenlebwidrigkeit gegen Dich und gegen uns.

"Lebenleite uns zu Dir, zu dem Guten und lebabwende uns von den Anursachnissen zum Bösen.

"Auf dass Du uns erlösest von dem Wesenwidrigen (dem Uebel).

"3. Denn (weil, sowahr) Dein is das Orom-Wesenleben, die Orom-Kraft, die Orom-Macht, die Orom-Waltung, die Orom-Glorheit von Vollzeit zu Vollzeit in

der Orom-Zeit, stets gleich wahr, gleich selig, gleich heilig, gleich gut, gleich lebvollwesentlich.

"O sel'ge Wahrheit!" μ.

DAS BÜCHLEIN VOM LEBEN NACH DEM TODE. By *Gustav Theodor Fechner*. Hamburg and Leipsic: Leopold Voss. 1900. Pages, 86.

Leopold Voss, the well-known publishing house of Hamburg, has republished Gustav Theodor Fechner's essay on *Life After Death*, which is one of the most remarkable discussions of the subject. Fechner is not quite free from fantastic notions, but his observations are based upon a fine psychological insight into the processes of soul-life, and are, to say the least, very suggestive. A republication of Fechner's treatise is timely, since the problem has come prominently before the public, and we need not say that Fechner's mode of treatment is the soberest of all among the psychical research publications. P. C.

THE GOSPEL OF JESUS ACCORDING TO ST. MATTHEW. As Interpreted to R. L. Harrison by the Light of the Godly Experience of *Sri Parânanda*. London: Kegan Paul, Trench, Trübner & Co. 1898. Pages, 264. Price, 6s.

We could have wished that there had been more information given concerning the origin and significance of the present book, as well as concerning the personalities involved. All we have in the preface are the words of Miss Harrison, who is the medium through whom Paránanda's revelation was communicated, to the effect that "every word of the notes at the foot of the text fell from the lips of my beloved Teacher. May his commentary establish in Christ and God all who have thoughtfully read, discussed and doubted, and at last mourned and hungered for Truth!" The book consists simply of the text of the Gospel of St. Matthew in large, readable type, with footnotes, which footnotes are the comments of Paránanda upon the Gospel, and, as the utterances of an Oriental and of a deeply religious man, who takes a very impartial and charitable view of Jesus, are interesting and to some may be of value. μ.

A CRITICAL ESSAY ON BERKELEY'S THEORY OF PERCEPTION. By *Ikbal Kishen Sharga* (*Pandit*), Professor of Philosophy, Bareilly College, Bareilly. Allahabad: Printed at Liddell's N.-W. P. Printing Works. Pages, 123.

As the work of a learned Indian scholar, this little brochure is interesting. It is to be expected that Berkeley's system would appeal to the Hindu mind. Prof. Sharga has endeavored to explain Berkeley's theory of perception in accordance with his own principles. He believes that theory to be substantially correct, but on metaphysical grounds solely, not on psychological, in which last province Berkeley was weak. Berkeley, in the Professor's words, "cannot be said to have solved the whole problem of human knowledge; but his theory seems to rest on a broad basis of truth, which will remain firm and immovable till the end of time." u.

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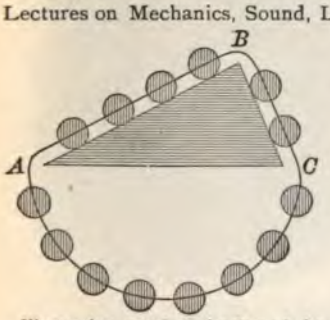

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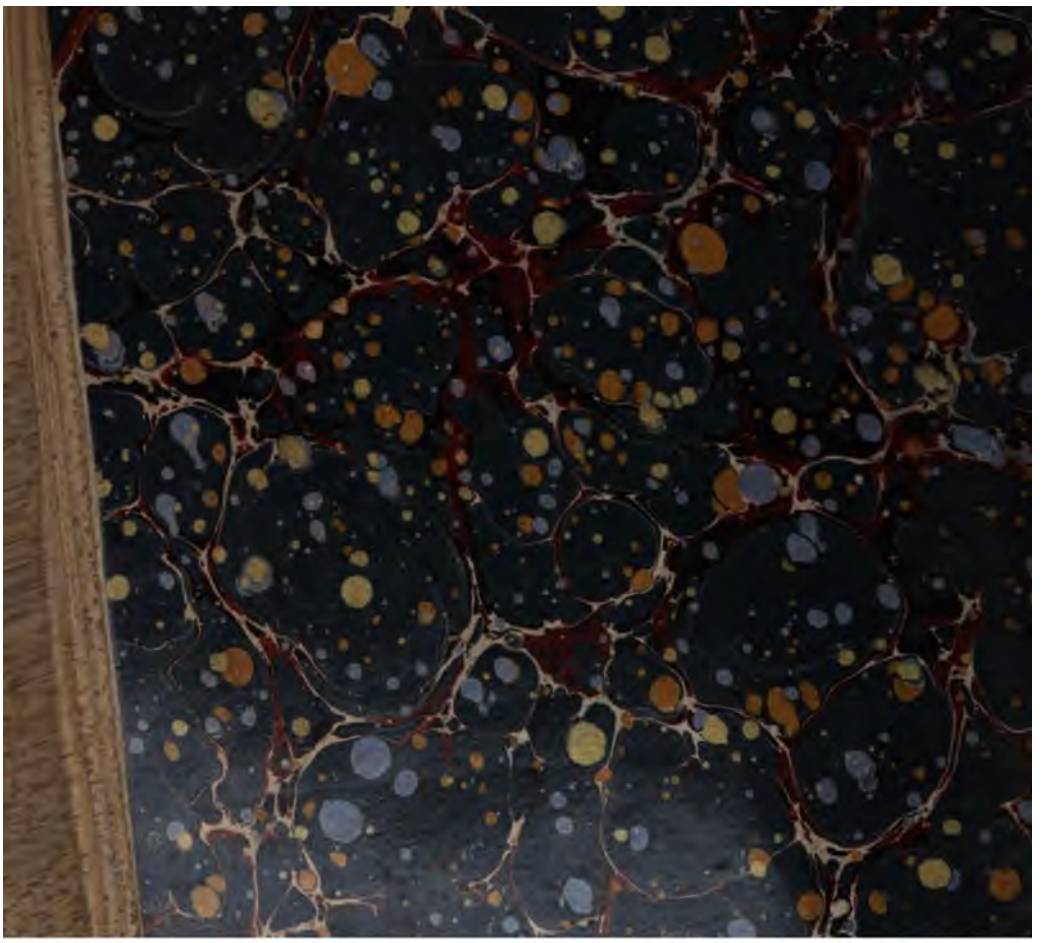

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